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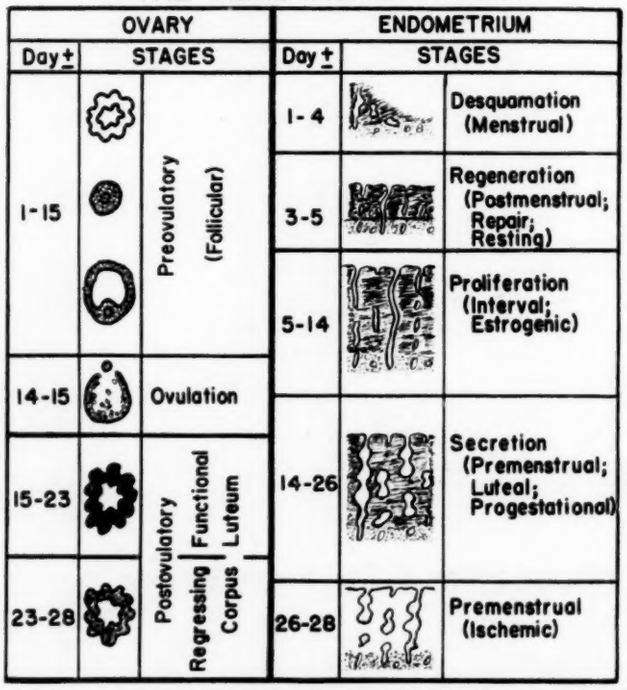
THE MENSTRUAL CYCLE



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GRID TECHNIQUE AS TOOL FOR IMPROVING HEALTH SERVICES TO INSTITUTIONALIZED CHILDREN

A TEN-YEAR EXPERIENCE

Ralph Fried, M.D.
and
Morris F. Mayer, Ph.D., Cleveland

• *The grid technique is a means of keeping the medical records of children and ascertaining direction and quality of growth. It consists of the use of a chart, the face side of which gives a tabulation of the height and weight records of the child and the essential graphic representation of these records. Additional data are entered on both obverse and reverse sides. After some experience, the observer becomes very adept at reading the graph and discovering signs of disturbed development in a child.*

Physical or emotional illness is manifested by failure to progress along the curve or by deviations from it. This is illustrated by five case histories, which also show how recovery is indicated by resumption of growth. The grid technique has been found to be more productive of results than is the routine inspection of large groups of children. It is the easiest and most dependable way of assaying the quality of growth, setting therapeutic goals, and evaluating the results achieved.

If the business of growing is the first priority of every child, then the measurement of that growth properly becomes the primary concern of the physician entrusted with the welfare of the child.[1] It has been well established that any major or minor assaults on the child's well-being, be they assaults on the soma or the psyche, will be accurately mirrored in aberrations in the rate and the quality of the growth of that child. It most logically follows that an essential tool of the pediatrist is an accurate but simple means of measuring such growth. In this paper we shall present our experience in the use of the Wetzel grid technique over a 10-year period in a children's home and demonstrate that the grid technique is the most useful manner yet devised of diagnosing and treating growth failure.

The detection, diagnosis, and treatment of growth failure by the use of the grid technique is, of course, very important in private practice, but the grid technique assumes ever greater value when used in the care of children residing in an institution.[2] It is more important because the doctor-child relationship in an institutional setting is often less intimate than the one that is developed between the pediatrician and the child for whom he cares as a private patient. This is true because of the lack of the mother's presence to supply all the small but important details of the child's progress, because the relationship is of shorter duration, and because it usually begins later in the life of the child.

The main concern of this study is to show the value of the grid technique in improving the quality of medical care in a children's home and thus to suggest its value in improving care in other institutions caring for children, such as public and private schools, convalescent hospitals, and preventoriums. It can be emphatically stated at once that the two principal enemies of good medical care in an institution are monotony and ennui. This is applicable to all medical care or medical inspection carried out in an institutional setting, whether it be an orphanage, public school, or the medical inspection of children for camps, swimming programs, nursery school, athletic programs, or intramural sports.

An excellent example of the veracity of these statements is the method used most generally in carrying out medical inspection in the schools. The physician is handicapped from the start by the sheer weight of numbers. The usual custom is to give cursory medical inspection to approximately 40 children in a one-morning session. Since most of these children are well or they would not be in school, the routine quickly becomes burdensome and boring—corollaries of inefficiency and disinterest. The examination is made twice sterile because no responsible or informed adults are present to offer an estimate of the child's health, i. e., to assume the role played by the parent in the visit to the pediatrician's office. In this recounting of our experience in

Because of space limitations, parts *C*, *D*, and *E* of the figure have been omitted from THE JOURNAL and will appear in the authors' reprints.

the use of the grid technique over a 10-year period in a children's home, we shall portray our efforts to overcome these problems.

The work was carried out at Bellefaire, the Cleveland Jewish Children's Home, formerly an institution for dependent and neglected children, which has during the past decade become a residential treatment center for emotionally disturbed children. It is built on the cottage plan on a 32-acre parcel in a beautiful suburb. The children come from many states and are in need of treatment, group living, psychiatric and casework therapy, and special education. Usually they stay for two to three years. In the past the children have been placed because of homes broken by divorce or illness, but recently all placements are psychiatric referrals. The children are sent to Bellefaire by either psychiatrists or social agencies. Psychiatric service, casework service, recreational facilities, and living in small cottage groups are geared to provide a therapeutic environment. A pediatrician, attending psychiatrist, dentist, caseworkers, eight cottage-parent couples, group workers, psychologist, librarian, 12 part-time recreational workers, and an office and maintenance staff carry out the work of the institution. The professional program is under the supervision of the resident director. The agency is merged with the Jewish Children's Bureau, a foster home agency, and the executive director of the Jewish Children's Bureau is also the executive director of Bellefaire.

The routine medical care received by the child entering Bellefaire is as follows: (*a*) admission physical examination, (*b*) immunization procedures, (*c*) chest x-ray, (*d*) semiannual physical examinations, and (*e*) physical examination at time of discharge. In addition all children receive casework conferences, psychological testing, and psychiatric consultation and therapy. The following procedures are determined by the need of each individual child: consultation with other medical specialists, as special psychotherapists, oculists, and neurologists; special laboratory procedures, such as electroencephalogram when indicated; and physical examinations at more frequent intervals than semiannually when the grid technique alerts the staff to growth failure in the child.

In 1944 the grid technique was introduced into routine use at Bellefaire as a means of keeping the medical records of the children and as a careful check on the direction and the quality of growth the child maintained while residing in the home. It has been most valuable to us as an accurate and sensitive barometer in recording the progress of the growth and development of our children. In addition to this it has proved to have other great advantages.

Complete and Precise Record

The grid is a complete, precise, and clear record of the total picture of the child's health.[3] The face side contains the height and weight records of the child and a graphic representation of these records. A single glance will reveal the speed and direction and whether growth failure exists in that particular child. Also from the face side one can easily determine the basic caloric requirements of a boy or girl at any given developmental level. The reverse side of the grid has space for writing history and records of physical examinations, of immunizations, of laboratory tests, of operations, and records of special examinations, such as dental, eye, and otolaryngological. At Bellefaire we keep the grid in a large manila folder in which we file our consultation reports, letters from hometown doctors, social history reports, and any other data relevant to the welfare of the child. We have found that this provides us with an easily accessible, quickly discernible, total record of the child's progress.

Selection of Children in Need of Special Attention

After relatively brief experience, almost any observer can learn to read those signs in the grid that portend stormy times for the child. This ability to select those children who are most in the need of care represents one of the chief advantages of the grid technique. When one is working with large numbers of children, those who show growth failure can easily be singled out for special attention, closer inspection, and more frequent follow-ups. When we find a child in growth failure, as demonstrated by his graph on the grid, we have special consultations with the child's caseworker, cottage parents, and others concerned with his welfare. Extra laboratory examinations are ordered as indicated, and psychiatric care may be intensified. Contrast this graphic presentation to cryptic columns of figures that conceal their story unless they are very carefully scrutinized. It is our custom in doing our semiannual examinations to have the cottage mother present. She assumes the role of the parent in private pediatric practice. It is immediately helpful to be able to see at a glance at the grid that 9 of the 10 children in her cottage are doing well and to devote extra time and attention to that 10th child.

Liaison Between Physician and Staff

The grid is an excellent means of bringing about close understanding between the pediatrician and the nonmedical personnel of the staff concerning the problems of the children in whom they have a mutual interest. At Bellefaire, following the semiannual examination the physician has a meeting with the social workers. By holding up a grid before such a group, he can illustrate the progress of the child at a single glance. This rapport invites comments on the situation that are valuable because they afford information from other than a strictly medical point of view. The staff find these meetings exhilarating, and they are interested to see the progress of a particular child. A sense of continuity is engendered, since this particular child may have been discussed at a previous meeting, and thus the staff may evaluate the efforts that have been directed to helping this child. The treatment of growth failure does not involve the doctor and the child alone, but many people. When recovery is achieved it represents efforts of the whole staff. The grid binds all interested parties together in a common effort by effectively increasing mutual understanding.

A, record of top quality physical growth over a long period of time (case 1); *B*, record illustrating growth failure caused by both emotional disturbances and organic disease, with growth recovery after correction of problems (case 2).

GRID for Evaluating PHYSICAL FITNESS

in Terms of PHYSIQUE (Body Build), DEVELOPMENTAL LEVEL and BASAL METABOLISM

— A Guide to Individual Progress from Infancy to Maturity —

Name [redacted] No.

Date of birth 2/9/30

DATE	AGE	WT.	HEIGHT	DEV. LEVEL
3/27/37	9-7	53	50	88
6/10/37	9-9	61	50½	96
10/20/38	9-10	63½	51	79
6/28/40	10-5	65	52½	83
10/2/40	10-11	68	53	89
6/26/42	11-5	74	54¼	97
1-24-44	12-0	76½	55	101
6-2-44	12-5	84	56½	110
4-9-43	13-2	92¼	57	120
11-3-43	13-9	101¼	60¼	130
6-2-44	14-4	116	63	144
12-4-44	14-10	123	64¾	148
3/30/45	15-3	127	65¼	154
6/22/45	15-6	127¾	66	155
9/26/45	15-6	130¾	66	157

PHYS. STATUS — CLIN. / GRID — A/N/B

DIRECTIONS

Plot Wt. & Ht. Read Dev. Level. Plot against Age to secure Schedule & sight on Basal Heat Production.

Healthy progress prefers development along channel of given body type & on a Schedule specific for Subject.

PHYS. STATUS	CHANNEL	KEY
Obese	A_1 –	C
Stocky	$A_1 A_2$	S
Good	A_2 M B_1	G
Fair	B_2	F
Borderline	B_3	B
Poor	B_4	P

AGE SCHEDULES

A = Advanced by ... yrs.

N = Normal (6778) Coursman-date in M Channel

R = Retarded by ... yrs.

SEE OTHER SIDE

A

PHYSIQUE CHANNELS

DEVELOPMENTAL LEVEL LINES

BASAL HEAT PRODUCTION — Calories per day

AGE SCHEDULES OF DEVELOPMENT (Accelerated)

BOYS GIRLS

WEIGHT — Pounds — HEIGHT — Inches — CHRONOLOGICAL AGE — Years

GRID for Evaluating PHYSICAL FITNESS

in Terms of PHYSIQUE (Body Build), DEVELOPMENTAL LEVEL and BASAL METABOLISM

— A Guide to Individual Progress from Infancy to Maturity —

Name [redacted] No.

Date of birth 9-2-43

DATE	AGE	WT.	HEIGHT	DEV. LEVEL
9/2/48	5-7	47½	44"	48
11/2/47	6-9	49¼	112.5	48
6/9/49	7-	46¾	116.6	48
12/22/49	6-10	49¾	118.7	58
12/2/50	7-10	56½	123.1	67
8-14-51	8-1	57¾	49½	70
5/19/51	8-5	58¼	125.6	71
5/24/52	8-9	63½	131.2	80
12/5/52	9-10	68½	132.1	88
9/27/54	11-7	79	56¾	105

63 3/4

Age seen residing in South Sea

PHYS. STATUS — CLIN. / GRID — A/N/B

DIRECTIONS

Plot Wt. & Ht. Read Dev. Level. Plot against Age to secure Schedule & sight on Basal Heat Production.

Healthy progress prefers development along channel of given body type & on a Schedule specific for Subject.

PHYS. STATUS	CHANNEL	KEY
Obese	A_1 –	O
Stocky	$A_1 A_2$	S
Good	A_2 M B_1	G
Fair	B_2	F
Borderline	B_3	B
Poor	B_4	P

AGE SCHEDULES

A = Advanced by ... yrs.

N = Normal (6778) Coursman-date in M Channel

R = Retarded by ... yrs.

SEE OTHER SIDE

B

PHYSIQUE CHANNELS

DEVELOPMENTAL LEVEL LINES

BASAL HEAT PRODUCTION — Calories per day

AGE SCHEDULES OF DEVELOPMENT (Accelerated)

BOYS GIRLS

WEIGHT — Pounds — HEIGHT — Inches — CHRONOLOGICAL AGE — Years

Advantages over Clinical Observation

Growth failure is not always visible. We have seen again and again children who fail to gain the expected one developmental level per month and thus are considered to be lagging in growth. On physical inspection by several competent observers no evidence of poor nutrition is detected. This phenomenon has been reported by other workers. Since these children represent very early and also the very mildest degrees of growth failure, early treatment can check the trend, diminishing the length of treatment and sparing the deleterious effects of severe malnutrition.

In a previous paper [4] we described the effect of socio-emotional factors on growth. It was our experience in this work that when a child's record began to show recovery on the grid it was often several weeks or months before comparable improvement could be noted on clinical observation. This included not only a clinical estimate of his nutritional status but also emotional and mental improvement, which was always apparent. Occasionally the converse was noted; i. e., the cottage mother or social worker reported an improved emotional attitude in the child some weeks before his better adjustment was noted in an improved grid record. In the intervening years since publication of our original paper in 1948, the observations have borne out the previously reported findings. However, it must be kept in mind that simple improvement in the physical growth of the child was not always accompanied by simultaneous improvement in his emotional health.

Other Advantages

When a child has developed growth failure, the grid will show exactly on how many developmental levels deficit exists, and it can be estimated how much time and effort must be expended to return the child to his correct developmental level. Old and formerly useless data can be revitalized by charting this older information on the grid. When an older child has arrived at Bellefaire we have often retrieved old height and weight measurements from previous visits to physicians or even from old school records. We then fit these data in with the present height and weight measurements. At a glance we can determine whether a child has maintained his original channel and auxodrome over the years or whether he has shifted at some point of stress in his life (see figure).

Report of Cases

CASE 1.—This represents a child who enjoyed optimal growth during his seven-year stay at Bellefaire. When admitted he was in channel M, and he remained faithful to this channel during almost his entire stay, edging over into A1 in the final months of his residence. On the auxodrome side he began on the 67% auxodrome, where he remained until his discharge. This child came to Bellefaire on a dependency basis before the change of the Bellefaire program. His father was in a home for the aged and his mother in a hospital for the mentally ill. Since he was lazy and a grumbler, he did not do well in a foster home. The boy himself expressed a desire for group living. At Bellefaire, except for his lethargic nature, he made an excellent adjustment. At age 17 he left to join the Marines and made a good service record. The fact that he came to us with few emotional problems and the fact that his personality was well suited to group living is reflected in his fine growth record on the grid. The close correlation between good physical and emotional health and good growth as graphed on the grid is well illustrated by this case.

CASE 2.—This was the child of inadequate, unstable parents who had a long history of marital difficulty. She was placed at Bellefaire because of her inability to adjust to a foster home. Her personality showed the effects of this trauma. She was unable to relate, apathetic, and extremely self-centered. Her initial adjustment to living at Bellefaire was not good, as illustrated on the grid. She began to lose levels at once. This trend was accelerated by somatic illness. She had mumps in March, 1949, and chickenpox and rubeola in April, 1949. We followed her very closely in the ensuing months, but she remained unhappy and poorly adjusted and seemed unable to recover to her original auxodrome. In March, 1951, she was brought to the Bellefaire hospital with a rash that proved to be purpuric. She was admitted to Mount Sinai Hospital because of severe epistaxis, and a diagnosis of thrombocytopenic purpura of the idiopathic type was made. In July, 1951, a splenectomy was performed. Since that operation she has improved in many ways. Her grid record is better, and her adjustment to living at Bellefaire is better. At the time of this writing she has been able to return to a foster home, where she is making a good adjustment. This case history illustrates growth failure in which both psychic and somatic factors played a role. The recovery phase of the grid represents both recuperation from purpura and the adjustment of time to living in a group.

CASE 3.—This boy was admitted to Bellefaire because he was very disturbed. His mother had died, and his most inadequate father was unable to maintain the home. All of this is reflected in his grid record. Although he only shifted a channel or two on the channel side of the grid the more sensitive auxodrome shows level lag and moderate growth failure. He had some psychiatric interviews and most adequate and intensive case work. We felt that this, plus five years of residence in a therapeutic environment, helped him to relate better to the world in which he lived. His emotional improvement and his social adjustment was reflected in full recovery on the grid and a return to his original channel and original auxodrome. A long-term record such as this one affords a vantage point from which the whole staff can clearly see what the institution strives for and sometimes achieves. The boy returned to his father, who had reestablished his home, and he now attends college.

CASE 4.—This was an attractive young girl who came to Bellefaire with a school phobia and an anxiety panic. Her father was much older than her mother, and the obvious basis of the marriage was the material benefits the mother obtained in this union. The father had become very abusive to the mother and seductive to the child. Much of the child's school phobia was based on the fear that her mother would suffer physical harm while she was at school. At Bellefaire she received much help from the caseworker and psychiatrist. A major focus of her treatment was the school planning. For some time she attended no school, then our campus school, and finally was able to attend junior high school. Her attitude toward her father and mother was of great importance in the treatment. It took much time before she was able to accept the reality of the situation of her family. The grid shows a consistently good record of physical growth, which was concomitant with the improvement in her emotional status. After the father's hospitalization and death, some months ago, the girl has returned to her home with her mother, where she is happy and well. With this possibility she progressed quickly. Her attitude toward school improved, as well as her emotional adjustments, and she was soon able to leave Bellefaire. Examination of the grid record shows a consistently good record of physical growth. It did not take her emotional problems long to improve. While she was residing at Bellefaire, she never suffered any severe physical or growth disturbance, as illustrated by her record on the grid.

CASE 5.—The grid record of this girl is that of a child who had many emotional problems. A glance at her grid will show she suffered severe growth failure. Since no organic reason was found for this, it was assumed that the cause lay in her emotional problems. This case is reported because, although the child eventually overcame her problems to a large extent, concomitant improvement in her growth was not noted. This child was a

pleasant but rather dull girl with an intelligence quotient of 90. She had lived in foster homes because her mother had died. Her father had remarried, and there was considerable conflict between the girl and her stepmother. When the child entered Bellefaire she had some mild homosexual tendencies but seemed to have a total concern for her body. This amounted to a conversion hysteria, and she frequently entered the hospital at Bellefaire with phyiscal complaints. She received psychotherapy and had casework conferences. Gradually she improved, developed heterosexual interests, and went on to make a fine adjustment to living at Bellefaire. It is interesting that the physical growth did not improve and that she continued to lose levels until she was discharged to return to a foster home.

Summary and Conclusions

Routine medical inspection of large groups of children in institutional care is usually a banal procedure, unproductive of results and conducive to mediocrity in care. Growth is the *sine qua non* of pediatrics. Any interference with the well-being of the child will be reflected in aberrations of growth. The grid technique is the most convenient and most accurate means of measuring growth. It is also the easiest method of assaying the quality of growth and of interpreting the growth to physicians, parents, and lay staff and is the most dependable way to set therapeutic goals and evaluate the results achieved.

10300 Carnegie Ave. (6) (Dr. Fried).

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ANESTHESIA FOR TONSILLECTOMY IN CHILDREN

ENDOTRACHEAL TECHNIQUE, WITH CARDIOVASCULAR OBSERVATIONS

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The most neglected of anesthetic procedures is that for tonsillectomy.[1] The anesthesia is usually considered to be too minor and too simple to deserve the attention of the expert. It is relegated to the novice, and conditions are permitted that would not be tolerated in any adult patient. From the moment the child who is to undergo this surgery enters the hospital he is shocked psychologically, physiologically, and pharmacologically.

It is our attitude that the child undergoing tonsillectomy should have the best anesthetic technique possible, and it should be rendered by the best anesthetist who is available. It is our intention to outline a simple, safe anesthetic plan developed in accordance with anesthesiologic principles that have been accepted in every other surgical situation. These principles are choice of anesthesia based on (1) safety for the patient, (2) comfort for the patient, and (3) convenience for the surgeon. These goals must be achieved with a minimal disturbance in psychic and physiological function.

The preoperative preparation is primarily psychological.[2] Each child who enters the hospital for an operative procedure should be told briefly what is to happen to him and briefly why it has to occur. One must never dissimulate with a growing child. Once in the hospital the child should receive a preoperative visit from the anesthesiologist. The child should see and know him. The anesthesiologist should gain the child's confidence, tell him what he is going to do the following day, and explain the anesthetic in simple terms, using familiar objects for purposes of analogy (such as describing the anesthetic mask as a Halloween mask). One may promise to sing a song or tell a story, and the promise of a lollypop is better than all the drugs in the pharmacopoeia.

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• *Psychological preparation of a child includes a preoperative visit from the anesthesiologist, who must gain the child's confidence and must explain the program of the following day.*

The premedication for anesthesia here recommended is scopolamine given intramuscularly and 50 to 150 mg. of secobarbital given rectally. The subsequent anesthetic inductions, in the 50 cases here reported, were all carried out with a vinyl ether–diethyl ether sequence by the open drop technique. Thereafter the anesthesia was maintained with an ether-oxygen mixture. It was given after endotracheal intubation by the orotracheal route under direct laryngoscopy in 25 patients; in the remaining 25 patients it was given by using the ether hook for insufflation.

A comparison of the two groups revealed some disadvantage in both methods, but the advantages of the endotracheal technique far outweigh any disadvantages. It is recommended as causing less asphyxial phenomena, giving better control of respiration, affording better working conditions for the surgeon, and minimizing the trouble caused by bleeding and secretions.

Premedication

Premedication should be generous but not depressing. Three methods are in current use: (1) a single generous dose of morphine with scopolamine, as outlined by Leigh and Belton,[3] (2) rectally administered thiopental (Pentothal) in doses of 1 gm. per 75 lb. of body weight (Mark and associates [4]), and (3) rectally administered capsules of secobarbital (Seconal) plus scopolamine given intramuscularly. Our choice is the last. It is easily done by the average nursing personnel, and the dose of secobarbital

varies from 50 to 150 mg. The capsule is pierced by a pin on each end and gently inserted into the rectum. In contrast, the use of thiopental solutions requires a proper mixing and administration, which generally is most specifically accomplished by the anesthesiologist himself.

With respect to a belladonna derivative, it should be stated first that its administration is mandatory. The objects to be accomplished include blocking of vagal reflexes, the drying of secretions, and the antagonizing of untoward reactions from the general anesthetic agent. Our preference is scopolamine. This drug is a vagal blocking agent that, in our experience, is little different in toxicity from the effect of atropine. Secondly, it has been demonstrated that scopolamine is superior to atropine in allaying mucus secretions of the pharynx and trachea.[5] Thirdly, scopolamine has a tranquilizing effect on the patient and produces an appreciable degree of amnesia. Lastly, scopolamine does not increase the pulse rate, as is frequently observed with atropine.

Fig. 1.—Endotracheal anesthesia technique with the surgical field prepared for tonsillectomy.

On the date of operation the keynote to handling the child patient is diversion: 1. Relatives and friends—including well-meaning family physicians—are excluded from the induction room and from the operating room floor. 2. Extraneous noises are eliminated as far as possible, and talk is taboo during induction. All present are instructed to cooperate in this. 3. No restraints are used, and children should not be forced to lie down. On several occasions, induction has been carried out with the patient sitting. The only precaution taken is to have a nurse beside the operating table for support of the child and to limit involuntary movements. 4. The child is allowed to hold the Yankhauer mask and to smell it. This is easily a pleasure because the gauze is impregnated with a few drops of spearmint oil. 5. A conversation in a low modulated, comforting, and reassuring voice is begun with the child. This vocal anesthesia is, indeed, the oldest sedative we have. Most of the children treated with the combination mentioned above arrive in the operating room asleep but responsive to questions and directions. They are open to suggestion and cooperative.

Anesthetic Techniques

There are two commonly used methods for tonsillectomy. Each has several subsidiary modifications. That this condition exists attests to the fact that there is much to be desired as regards an ideal technique. The following systems are outlined for completeness: (1) open system (ether hook insufflation), with (*a*) traditional gags (Denhardt) or (*b*) special gags (Davis-Crowe); and (2) nonrebreathing (endotracheal) system, with (*a*) insufflation (Barton [6]) or (*b*) closed valvular.

Plan of Study

The plan of our present study was to carefully check all vital signs during insufflation techniques and during the intubation technique and compare the findings. Blood pressure values were obtained by auscultation, using a children's cuff (8 cm. wide) and a mercurial sphygmomanometer; pulse rates were obtained by auscultation of the apical cardiac rate. Oxygen saturations were determined in six cases, using the Conley-Waters oximeter and the standard electronic earpiece. Observations were made on 50 consecutive children ranging in ages from 3 to 8 years.

All anesthetic inductions were carried out with a vinyl ether (Vinethene)-ether sequence by the open-drop technique and the anesthesia maintained with an ether-oxygen mixture. Twenty-five patients were intubated by the orotracheal route under direct laryngoscopy. All endotracheal tubes were scrubbed with hexachlorophene (PhisoHex) 20 minutes preanesthetically. Intubation was performed in second-plane clinical anesthesia. The tubes were connected to a Digby-Leigh or Stephen Slater nonrebreathing valve and maintained with ether-oxygen or ether carried by a 50% nitrous oxide and 50% oxygen mixture (fig. 1). No difference was apparent, and all cases were combined. The remaining 25 patients were maintained on ether-oxygen, using the ether hook for insufflation. Various mouth gags were employed, including the Denhardt and the Crowe-Davis gag, and various positions were employed, including the steep head-down, or Rose, position. No significant differences were observed, and all cases were therefore considered together.

An interval of at least 10 minutes elapsed from the establishment of surgical anesthesia until surgery began. This allowed for equilibration and stabilization of both the anesthetic plane and the cardiocirculatory system. The blood pressure and pulse values taken during this time served as controls for subsequent changes. Any such changes would thus be a reflection of several variables: (1) reflex circulatory responses to surgical trauma (Dripps); (2) hypoxia due to mechanical obstruction; (3) functional obstruction due to laryngospasm or bronchospasm; (4) carbon dioxide accumulation; or (5) a shifting level of anesthetic depth.

The observations were made every two to three minutes. In order to accomplish this task two anesthesiologists were assigned to each tonsil case. One man gave his undivided effort to the maintenance of anesthesia,

the other devoted his entire attention to the observation and recording of cardiovascular respiratory and oxygen-saturation changes. At the termination of the surgery a thorough pharyngeal and endotracheal toilet was performed. The presence or absence of blood in the suctioned tracheal contents was recorded.

Advantages of Endotracheal Technique

The endotracheal technique provides a free unobstructed airway; eliminates the obstruction due to relaxed tongue or pharyngeal tissues; avoids obstruction and trauma to epiglottis and larynx due to improper retraction; and prevents laryngospasm. Decreased respiratory effort results from freedom of air flow and diminished dead space. Control of the airway is provided at all times. There is a smoother plane of anesthesia because of constancy of anesthetic concentration. In insufflation techniques for tonsillectomy, access of anesthetic agents to pulmonary tissue is frequently impeded. This often necessitates interruption of surgery to adjust the anesthetic. Aspiration is prevented, as the endotracheal tube occupies the entrance to the tracheobronchial tract. Therefore, foreign bodies or materials are relatively incapable of entering the trachea. It has been suggested that the endotracheal tube during tonsillectomy offers a tract along which blood may seep. This is totally unsubstantiated by a review of the incidence of aspiration. Assistance may be rendered in control of ventilation if the position or inadvertent deep anesthesia reduces ventilation. Conditions for immediate respiratory resuscitation are also provided.

Disadvantages of Endotracheal Technique

The following disadvantages are those generally expected in inexperienced or incompetent hands for endotracheal anesthesia in any age group; for the trained anesthetist they hardly exist; (1) trauma of laryngoscopy to teeth, pharynx, glottis; (2) postintubation laryngeal edema; (3) untoward reflex activity, with cough and spasm; (4) kinking of the endotracheal tube; (5) endobronchial insertion occasionally occurs but is easily avoided by adherence to simple principles; and (6) aspiration of the tube is an unusual and rare occurrence.

The following alleged disadvantages are among those not valid in the management of endotracheal anesthesia for tonsillectomy: 1. The induction time is longer; the insertion of an endotracheal tube should be performed when a patient is in second-plane anesthesia. Light second-plane anesthesia is also the depth to be achieved for tonsillectomy with other techniques if a quiet field is the desired goal. Our experience has been that the induction times including the vocal anesthesia average 10 to 12 minutes on private cases and 14 minutes on service cases, regardless of subsequent technique. 2. Deeper anesthesia plane for maintenance has been offered as an objection. However, the employment of anesthetic-soluble ointment to the endotracheal tube or use of hexylcaine (Cyclaine) spray minimizes this aspect. Actually, in our experience the same depth of anesthesia had to be achieved to provide ideal surgical conditions. Our intubated children were awake at the conclusion of the procedure. They remained somnolent but arousable, and this goal is achieved partly by the premedication

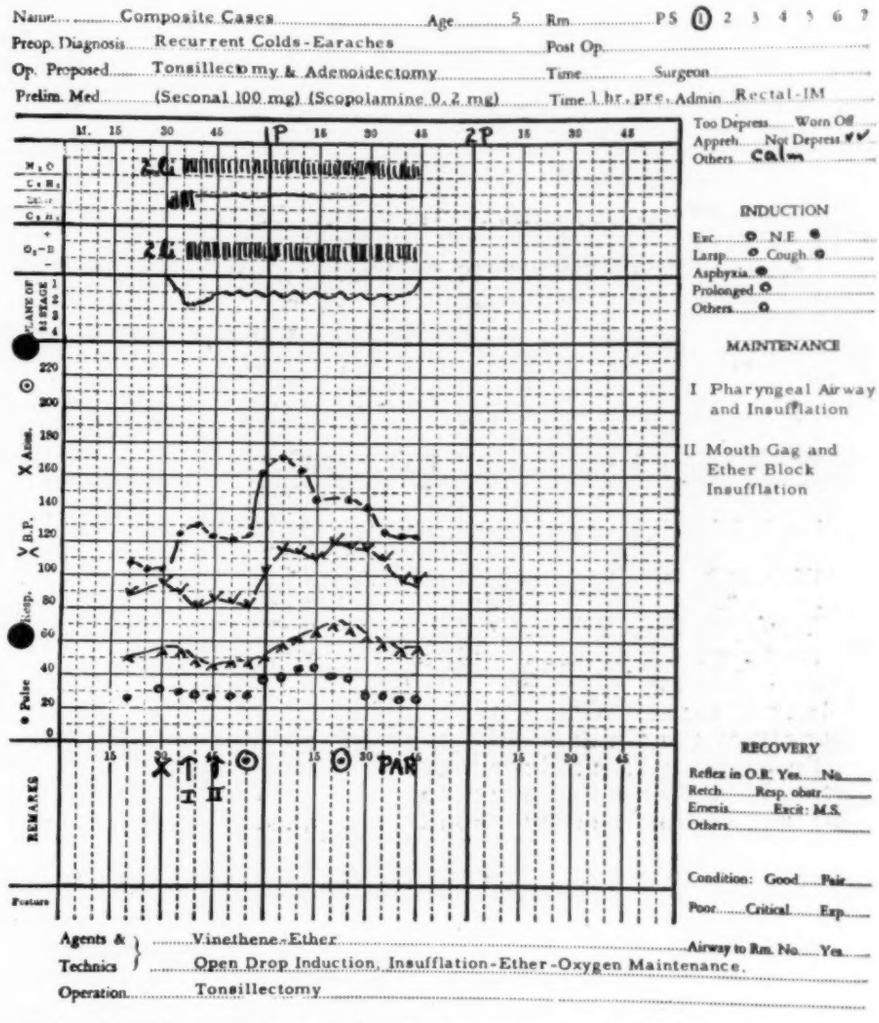

Fig. 2.—Composite anesthesia record of tonsillectomy patients (25) during ether-oxygen insufflation anesthesia, showing changes in cardiovascular function.

carry-over effect. Asphyxiated children are depressed or uncooperative postoperatively. Cerebral anoxia is known to prolong the effects of anesthetic agents. 3. The tracheal lumen is reduced by the presence of the endotracheal tube. This factor is only of importance in the infant under one year of age. We have not done tonsillectomies in the past five years in persons of this age group. 4. Impedance to surgery is mainly a psychological disadvantage. At first it is new and strange and, hence, objectionable. Practically, if the assistant (usually the anesthetist) properly retracts the tongue away from the side under dissection and if the anesthetic is maintained along the opposite buccolingual space and allows only the

curved metal connector to hook around the patient's lip, all of which is easily accomplished, then the endotracheal tube will be completely hidden from view. Usually the anesthetist acts as assistant.

Observations

The time required to establish surgical anesthesia and permit the surgeon to operate averaged 10 minutes for the insufflation group and 12 minutes for the intubated group; hence, there is no significant delay as might be assumed if endotracheal anesthesia is employed. Actually, less than one minute is necessary for inserting of the tube, placing the mouth gag, and connecting the valve.

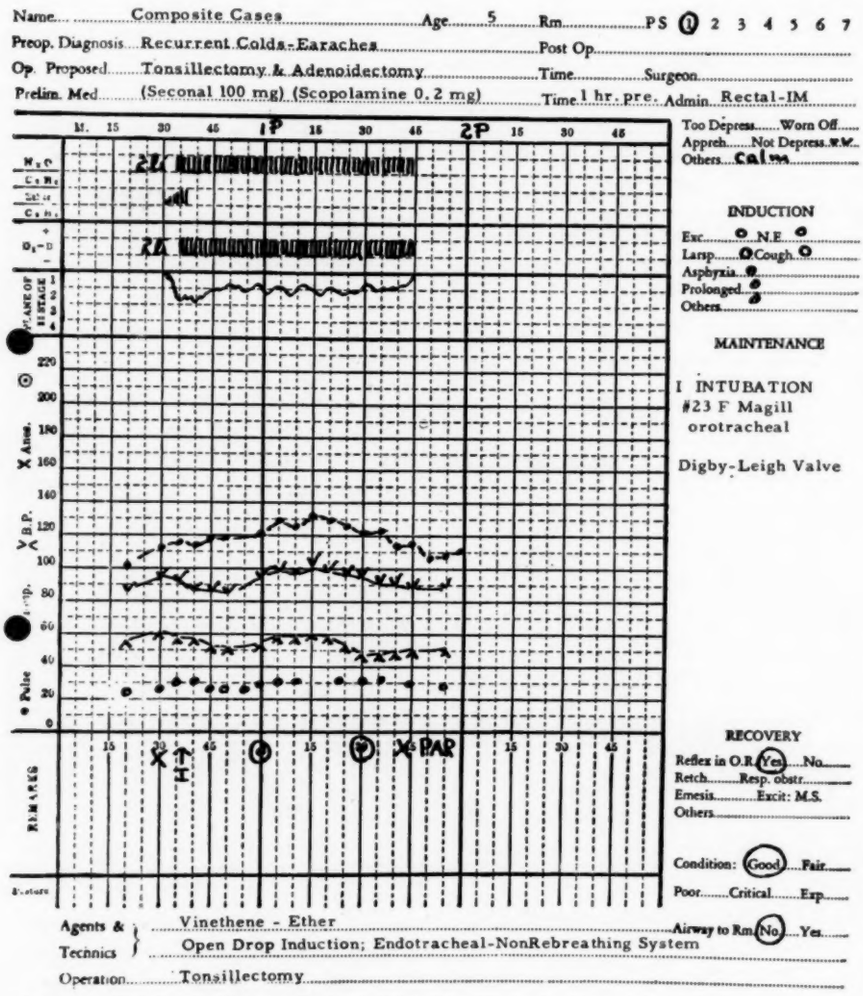

Fig. 3.—Composite anesthesia record of tonsillectomy patients (25) during endotracheal ether anesthesia, showing relatively smooth cardiovascular course.

Cardiac rate observations have been analyzed at two arbitrary times during the surgery, namely, just after the surgery began and, again, at the conclusion of operation: 1. Rises in rate at the beginning of surgery occurred in 15 cases of the insufflation group and averaged 20% compared with an 8% average rise in 10 of the intubated cases. 2. An increased rate of 40% occurred at termination of surgery in 16 of the insufflation cases, compared to an 8% rise in 11 cases of the intubated group.

Blood pressure changes were similarly analyzed at two arbitrary times: 1. Initial rise in systolic pressure occurred in nine of the insufflated group, with an average increase of 32%, or 30 mm. Hg, while in the intubated group eight cases had an average increase of 9%, or approximately 10 mm. Hg. 2. Terminal systolic rises were found in 11 cases and averaged about 40%, or 38 mm. Hg, in the insufflation group. In the intubated group, nine cases averaged a 10% increase, or about 10 mm. Hg. These changes have been detailed in composite anesthetic records (fig. 2 and 3).

Oximetric recordings in three cases in which insufflation was used near termination of surgical procedure gave arterial oxygen saturation of 74.8 and 81%; in the cases in which intubation was used no saturation below 90% was observed.

Observations on pulmonary aspiration of blood during tonsillectomy with the insufflation versus the endotracheal technique are revealing. The incidence with standard insufflation was 100%. In every case there was a significant amount of blood in the trachea. The steep head-down, or Rose, position, theoretically utilizing the influence of gravity, had insignificant effect in minimizing aspiration (incidence of aspiration, 70%). This observation agrees with recent experiences by others in general surgical procedures (Culver, Makel, and Beecher [7]; Adriani [8]; and McKenzie [9]). On the other hand, in 500 consecutive tonsillectomies, aspiration occurred 26 times, or an incidence of 5%.

Complications

The commonest complication to be encountered is that of postoperative hoarseness. This invariably results from too large an endotracheal tube, traumatic intubation, or excessive pharyngeal manipulation. It should be first pointed out that in a teaching program, especially, the operative procedure will be long and trauma will be a factor. With the insufflation technique an appreciable incidence of postoperative stridor as well as laryngeal and tissue edema (uvula, epiglottis, glottis) is encountered. In an insufflation group of 200 cases it has occurred 21 times; in an endotracheal group of 500 cases it occurred 19 times. In brief, stridor has occurred twice as often in the nonintubated group.

In general, stridor and hoarseness are self-limited and have not required heroic measures in our experience. Whenever stridor appears, certain precautions are taken. The child is placed in an oxygen hood with high humidity, Alevaire (alkylaryl polyether alcohol detergent), and oxygen. A rapid subsidence of symptoms occurs.[10] Altogether, 17 patients (out of 500 patients in whom intubation was used) were maintained in an oxygen hood for 2 to 12 hours. There was no postoperative pneumonia, atelectasis, or pulmonary abscess. There was no anesthetic mortality.

Summary

Certain principles must be used by anesthesiologists to provide safe and physiological anesthesia in all situations. Premedication must be adequate to allay apprehension and decrease excitability. All patients should be visited by the anesthesiologist and psychologically prepared. There should be smooth anesthesia and avoidance of hypoxia and carbon dioxide excess. The axiom that "noisy respiration is obstructed respiration" applies particularly to tonsillectomy anesthesia. That this has been tolerated for so long in children is paradoxical. Next, a convenient operating field must be provided. Lastly, morbidity and mortality must be minimal. The endotracheal technique satisfies all these prerequisites. One can enumerate the following advantages with respect to routine endotracheal anesthesia in tonsillectomy: (1) minimal disturbance of physiology, (2) no asphyxia, (3) good oxygenation and control of respiration, (4) ideal working conditions—quiet field, (5) unhurried surgery, (6) diminished bleeding, (7) control of secretions, and (8) no aspiration of blood.

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PRESENT-DAY CONCEPTS OF ANACIDITY

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• The direct methods of determining the concentration of acid in the stomach by aspiration, titration, and pH measurements are now supplemented by indirect methods. The patient ingests an exchange resin combined with colored or fluorescent indicators. These are liberated by acid in the stomach and can be determined in the urine. Failure of the acid-secreting cells can thus be discovered.

The concentration of pepsin in the blood and urine depends on the activity of the chief cells of the gastric mucosa. Pepsin tests are therefore used to discover the varying degrees of failure of the enzyme-secreting cells.

The presence or absence of the intrinsic antianemic factor in the stomach is determined by two recent tests with radioactive cyancobalamin. Taken by mouth, it is absorbed by the intestine and excreted in the urine only if the intrinsic factor is present in the stomach.

Studies of gastric acidity have declined in popularity in recent years. Part of the reason for this has been the attendant discomfort for the patient weighed against the belief that knowing that there is acid in the stomach is not very useful anyway. Reports of benign gastric ulcers without free acid [1] and of the presence of free acid in 40% of gastric cancers [2] have contributed to this lack of interest in stomach acidity. It is my purpose in this paper to evaluate newer techniques of measuring gastric secretion, especially as they relate to anacidity, and to offer some comments on the usefulness of gastric acid determinations.

It is useful to reconsider briefly the make-up of the gastric glands. The figure, *A*, demonstrates the several types of cells that in different proportions make up these glands. The surface epithelium contributes a thick viscous mucus, while the neck cells form a thinner alkaline mucin. The parietal cells secrete hydrochloric acid at an unvarying concentration and at pH 0.87 [3] into the gastric lumen. The chief cells secrete pepsin both into the stomach and into the blood.[4] The parietal and chief cells make up the bulk of the glands of the fundus and are mainly responsible for digestion in the stomach. The mucin-secreting cells, found in highest proportion in the antrum, are believed by some to be responsible for intrinsic factor activity [5]; the mucus factors certainly have an important role in protecting the stomach against injury and autodigestion. The tests of gastric secretion that may be assayed by these different cell products are as follows: gastric aspiration (free acid and pH) and quinine carbacrylic resin (Diagnex) for acid secretion; gastric pepsin, uropepsin, and blood pepsin for pepsin secretion; and Schilling test and Glass test for intrinsic factor.

From Yale University School of Medicine.

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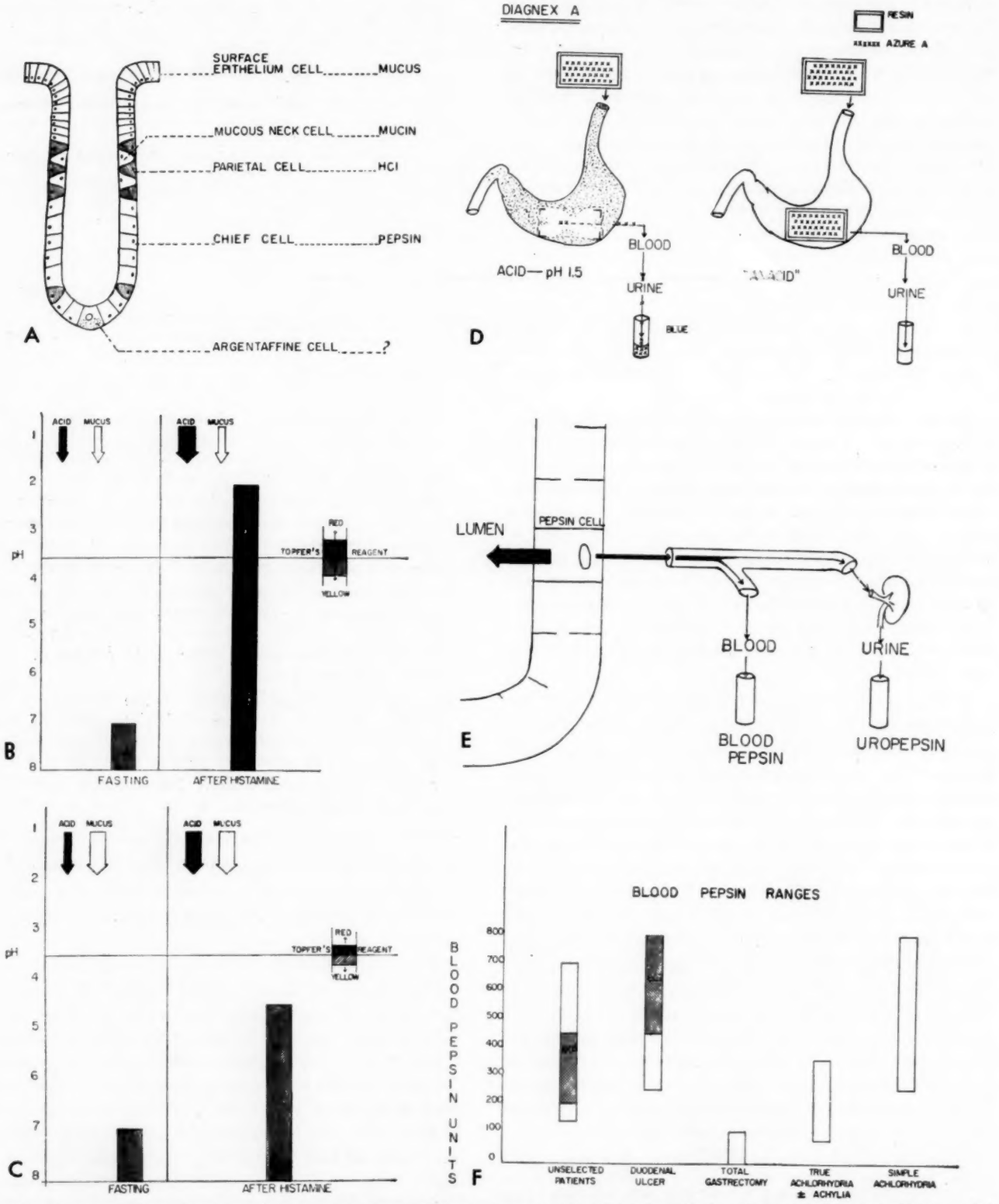
The studies on which the ideas outlined have been based were supported, in part, by a grant from the United States Public Health Service, an institutional grant from Yale, and the Bristol-Myers Company.

The quinine carbacrylic resin used in this study was supplied as Diagnex by E. R. Squibb & Sons, New York.

Tests Depending on Acid Secretion

Free Acid.—The most direct method of determining free acid is to insert a tube into the stomach and to check the aspirated stomach contents with Töpfer's reagent for "free acid," uncombined with buffers and mucus. Töpfer's reagent turns from yellow to red at a pH of 3.5, so that an initial yellow color is taken to mean no free acid; if free acid is present, the amount may be determined by adding 1 *N* sodium hydroxide until the red color turns to yellow. It will be seen from the discussion that follows that this procedure is somewhat inexact and that determination of the pH gives more meaningful information.

Hydrogen Ion Concentration (pH).—The symbol used to denote the amount of acid in a solution is pH. For every one-unit change in pH there is a tenfold increase in hydrogen ion concentration. For this reason, at low levels of gastric secretion, change in pH is a much more sensitive index than is measurement of free acid units. At high levels of gastric secretion, titration of free acid shows increases in acidity more exactly. The alkaline mucus of the stomach has a pH approximating 8.0.[3] It is an excellent buffer and can take up large amounts of acid. Since acid parietal secretion leaves the cell at a pH of 0.87, any combination of acid and mucus will give a final pH value between 0.8 and 8.0. It is evident from this that, even though the stomach may secrete free acid, the pH



A, schematic representation of important cells of gastric gland. *B*, usual response to injection of histamine is a change in pH beyond pH 3.5, so that Töpfer's reagent turns red. *C*, unusual response to an injection of histamine where the pH does not reach the critical level of pH 3.5, so that Töpfer's reagent remains yellow. *D*, schematic representation of the basis of quinine carbacrylic resin (Diagnex) test. *E*, pepsin is secreted into the stomach but also into the blood. *F*, variations in blood pepsin. Shaded areas represent 80% of values.

of the mixed stomach contents may not drop sufficiently low for Töpfer's reagent to turn red, even after administration of histamine.

This is especially important in gastric ulcer, when an initial pH above 3.5 (e. g., pH 7.0) may be found, Töpfer's reagent turns yellow, and it is said that no free acid is present. After an injection of histamine (which specifically stimulates acid secretion), acid may be poured out, so that the pH drops to below pH 3.5, Töpfer's reagent turns red, and free acid is obviously present. Fairly often, however, because of a large amount of buffering mucus or serum oozing from the ulcer, the pH may not drop below pH 4.0 or pH 4.5, Töpfer's reagent remains yellow, and the patient is declared to have anacidity. However, it is acid that has dropped the pH from 7.0 to 4.0 This may be seen very simply in another way. The stomach is aspirated continuously with hand suction, and the pH of individual 2 or 3 cc. samples is measured. Some of these small samples will be found to have a pH as low as 2.0 or pH 3.0, but, when they are combined in a 15-minute pool, the ability of the stomach to pour out free acid is again obscured. It is thus the change in pH following histamine that is significant in showing the presence of acid. For clinical purposes, such changes in pH may be easily found with readily available pH papers. Nitrazine paper turns from green to yellow at pH 3.5; hydrion indicator paper changes color with small changes in pH.

Combined Acid.—Combined acid is a misleading concept. Theoretically, the titration of stomach contents with sodium hydroxide from pH 3.5 to pH 7.0 will demonstrate any bound hydrochloric acid, but, actually, the excellent buffering capacity of mucus allows the taking up of sodium hydroxide to give a high, but false, "combined acid." There is no clinical situation in which combined acid has any significance, and the term and the procedure should be dropped.

Quinine Carbacrylic Resin.—The indirect test with quinine carbacrylic resin brought out by Segal [6] is attractively simple. It employs an indicator bound to an exchange resin so that the bond between the two is dissolved at an acid pH. The patient swallows the indicator-resin complex, and, in the presence of acid in the stomach, the indicator is released to be absorbed and excreted in the urine. Initially, a fluorescing quinine compound was used,[7] but, in the most recent revision of the test, the quinine has been replaced by a blue dye, azure-A. If the patient's urine turns blue within three hours, free acid is undoubtedly present. If it does not turn blue after being boiled with acid, then the blue dye has not been released or absorbed and, for rough clinical purposes, no free acid is present. The test has certain theoretical drawbacks. The presence but not the amount of acid is determined by this test. The pH must drop to 1.5 for maximal release of the dye, and such a low level as an indication of free acid will fail to show the presence of acid in some cases, for reasons already given. The dye must not pass through the stomach too rapidly (as in subtotal gastrectomy [8]) or a false-negative test will result; hence, there are certain patients who appear to have no free acid by the indicator-resin test who have abundant free acid when checked by other methods.

Tests Depending on Pepsin Measurement

The pepsin cells discharge the major portion of their enzyme into the stomach. A small amount of pepsin passes into the blood; because of this, tests of blood and urine may be employed in studying gastric secretion. Uropepsin, measured over 24 hours, probably indicates total peptic output of the gastric gland, while the blood pepsin seems to correlate with the gastric pepsin concentration. Nevertheless, they are more or less comparable. Clinically, these tests are very useful in pointing to a high level of gastric secretion. The chances are four out of five, for example, that a patient does not have a duodenal ulcer if his blood pepsin level is in the normal range of 200 to 450 units.[4] High levels in general denote hypersecretion and are clinically valuable in assaying the digestive-erosive factors in hiatal hernia, esophageal stricture, and other similar clinical problems.

The pepsin tests are also used to indicate varying degrees of gastric secretory failure.[9] After total gastrectomy, a blood pepsin level under 120 units is consistently observed. The source of this residual "pepsin" is unknown, but it may arise from pepsin cells in the esophagus or may be a "cathepsin." The levels in the gastric atrophy of pernicious anemia run as high as 250 units. In achlorhydria confirmed by absence of pH change, pepsin levels have been as high as 350 units, but, in achlorhydria not defined by an absence of pH change, pepsin levels parallel those in the general population and suggest that the "achlorhydria" is not real. Clinically, a high pepsin level means there is gastric hypersecretion on a high or a high-normal level and that the patient does not have gastric atrophy and cannot have pernicious anemia; a low level suggests gastric hyposecretion; and a very low level is compatible with gastric atrophy.

Tests Depending on Intrinsic Factor

Cyanocobalamin (vitamin B_{12}) is absorbed in significant quantities only if intrinsic factor is present. Two recent tests utilizing radioactive cyanocobalamin depend on this fact. In the Schilling [10] test, radioactive cyanocobalamin is given by mouth and, if intrinsic factor is present, it appears in the urine, after a flushing dose of regular cyanocobalamin. In this test, patients with achlorhydria excrete essentially normal amounts of cyanocobalamin and patients with pernicious anemia absorb, and therefore excrete, minimal amounts. Glass [11] has applied this concept to the external counting of radioactive cyanocobalamin deposited in the liver.

Comment

The critical determination of the presence of acid by the change in pH is important. Bloomfield [12] and Shay [13] have previously emphasized this. Failure to prove true anacidity leads to reports denying the diagnostic value of knowing that gastric acid is present. Studies of "benign gastric ulcer with achlorhydria" are universally based on Töpfer's reagent and not on determination of pH changes. The initially low acid level in gastric ulcers together with the blood or serum from the ulcer base obscures the presence of free acid; it seems likely that pH studies in such cases would attest to the presence of

acid. We have observed high pepsin levels in several such patients with supposed achlorhydria as another index of gastric secretory integrity.

In general, the tests depending on parietal cell secretion, with the exception of pH changes, are less sensitive than those depending on pepsin excretion. The quinine carbacrylic resin test is so simple, however, that, if it fulfills what appears to us to be its initial promise, it should be available in every physician's office as a standard screening test for acid. If no free acid is shown by the quinine carbacrylic resin test, then other indexes must be used to confirm the presence of achlorhydria. All these indirect tests avoid the effect of anxiety on the gastric secretory levels. If temporary anacidity is to be excluded, the pepsin tests may be more meaningful than a single gastric aspiration. The intrinsic factor tests are only possible in certain large centers. Another drawback is that administration of a therapeutic dose of cyanocobalamin during the test confounds further studies.

The determination of the presence of free acid is also most important in deciding whether gastric atrophy is present. Biopsy studies in several patients with "achlorhydria" have shown that a normal gastric mucosa is to be found when there are normal levels of uropepsin but that the absence of gastric glands and a thinned-out mucosa may well be predicted by the absence of pepsin in the urine.[14] It seems probable from this that tests depending on gastric acid do not necessarily demonstrate as advanced a degree of gastric dysfunction as those depending on pepsin and on intrinsic factor.

The practical importance of the indirect tests of gastric secretion lies in just this approach: the ease with which they make available clinical study of groups of cancer-prone patients. The special value of the pepsin and intrinsic factor tests lies in their pointing to gastric atrophy. The statistics that follow emphasize the importance of this. If the incidence of stomach cancer in patients with simple achlorhydria is taken to be 1%, then the incidence of gastric cancer in patients with gastric atrophy is 6%.[15] Most cancer surveys have not differentiated between these two groups and have studied achlorhydria only. Concentrating on finding patients with gastric atrophy by the pepsin and intrinsic factor tests would reduce this diagnostic burden.

Clinically, carcinoma of the stomach has three times the expected incidence in patients with pernicious anemia and also occurs three times as commonly in the relatives of patients with pernicious anemia.[16] The relatives of patients with gastric cancer are four times as likely to develop gastric cancer as the average person.[16] Apparently, whatever genetically leads to achlorhydria predisposes at least to a lessened resistance to carcinogens affecting the stomach. Such relatives, already statistically more likely to develop carcinoma, should be studied for evidence of gastric atrophy by one of the indirect methods outlined.

Suggested Application.—In the physician's office, Segal's quinine carbacrylic resin test offers a basic screening test. In the hospital, the pepsin tests seem most practical and specific for pointing to gastric atrophy. In patients discovered to have achlorhydria, a gastric aspiration should then be carried out; this is not so much to prove anacidity as to have the additional diagnostic aid of a cytological study. An x-ray examination of the stomach and a gastroscopy are also indicated, although, from a practical standpoint, the gastroscopy may be omitted if one is willing to miss an occasional gastric polyp. At the Yale University School of Medicine, this program is being explored at present.

The patients so selected should obviously be restudied at intervals; but whether x-ray, cytology, or gastroscopy will prove the most practical and most revealing remains to be seen. There are certain philosophical and therapeutic questions about the effectiveness of surgery in obvious gastric cancer when set against the anxiety aroused in patients studied after the basic screening. There is the hope that application of these concepts may discover cancer in an early state, before it is grossly apparent; for that reason, survey of patients for gastric atrophy seems to offer a worthwhile and relatively economical approach to the gastric cancer problem.

Summary

Gastric acid may be measured by direct aspiration. Evaluation of pH changes gives more useful information than the classical "free acid" measurement. There are several indirect measures of gastric secretion. The quinine carbacrylic resin (Diagnex) test gives a qualitative measure by the excretion of a blue dye in the urine. The pepsin tests in the urine and the blood and the tests depending on the absorption of radioactive cyanocobalamin (vitamin B_{12}) give a more quantitative measure of the degree of acidity. Low levels of pepsin in the blood or urine suggest gastric atrophy, and patients with this condition should be studied in cancer surveys.

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INFECTIOUS MONONUCLEOSIS MASKING CONCURRENT STREPTOCOCCIC PHARYNGITIS

Charles E. Bender, M.D., Seattle

• *In two patients with concomitant cases of infectious mononucleosis and streptococcic pharyngitis, a copious growth of beta hemolytic streptococci on blood agar and increasing antistreptolysin O titers were obtained. From the standpoint of the differential blood cell count, however, all evidence of the coexisting bacterial infection was obscured. The absolute lymphocytosis and high percentage of young lymphocytes characteristic of infectious mononucleosis concealed the leukocytosis and neutrophilia characteristic of streptococcic pharyngitis.*

Changes in the electrocardiogram and sedimentation rate were more marked than in uncomplicated cases of infectious mononucleosis. This experience casts doubt on some teachings regarding the "protean" manifestations of this disease. Unusual findings cannot be ascribed to infectious mononucleosis per se unless throat cultures, antistreptolysin determinations, and sedimentation rates have eliminated the possibility of concomitant streptococcic infection.

When a patient with pharyngitis is found to have a positive heterophil test and a blood cell count classic for infectious mononucleosis, the possibility of a concurrent bacterial infection is seldom considered. The primary purpose of this report is to show that coexistent streptococcic pharyngitis will probably go unrecognized unless throat cultures are made on blood agar plates. Reliance on white blood cell counts to furnish the clue to this complication is based on the erroneous supposition that a group A streptococcic infection will manifest itself by the familiar leukocytosis and neutrophilia. Actually, the absolute lymphocytosis and high percentage of young lymphocytes characteristic of infectious mononucleosis may endure, well sustained, in the face of a superimposed streptococcic infection.

Case reports of atypical infectious mononucleosis appearing in the literature seldom contain any reference to throat cultures or antistreptolysin 0 titers. Should any significant electrocardiographic abnormalities appear, they are ascribed to infectious mononucleosis, possibly undeservedly. Recently, the ultimate diagnostic practice has been to insist on a positive differential absorption test. This test establishes incontrovertible serologic evidence of the presence of infectious mononucleosis heterophil antibodies. The diagnosis in cases with atypical clinical and hematological features may be contingent upon this most important test. Apparently overlooked, however, has been the fact that a positive test affords no guarantee that all developments in a given case can be attributed to infectious mononucleosis per se. Peculiar findings should not be ascribed to infectious mononucleosis until other common causes for such findings have been eliminated.

There is reason to believe that some of the bizarre and so-called protean features attributed to infectious mononucleosis may, in fact, be the result of an undiagnosed streptococcic pharyngitis. I object to the hackneyed use of the adjective "protean" in connection with this disease. This is also the feeling of others who see a relatively large number of cases year after year and who insist on strict hematological and serologic criteria for the diagnosis of infectious mononucleosis.[1] Its unusual clinical features show no higher incidence or wider range than those of many familiar diseases.

This report is concerned with two cases of concomitant infectious mononucleosis and streptococcic pharyngitis seen recently. In the second case the patient developed electrocardiographic abnormalities of an order never observed by me in cases of uncomplicated infectious mononucleosis. Both cases were characterized by a copious growth of beta hemolytic streptococci on blood agar culture medium and by increasing antistreptolysin 0 titers.

From the David C. Hall Health Center, University of Washington.

Report of Cases

CASE 1.—A 21-year-old white male student was admitted to the Hall Health Center on May 4, 1955, in a mild state of collapse. Onset of symptoms occurred 10 days previously, with malaise and headache followed in a few days by a sore throat. Physical examination showed 2+ bilateral posterior cervical adenopathy. The anterior nodes were only slightly enlarged. The pharynx was red; there was an extensive palatal enanthema and considerable white exudate on both tonsils. The next day the liver and spleen were palpable. Chest roentgenograms were normal. There was little change in the physical findings, but a throat culture on the seventh hospital day showed a heavy growth of beta hemolytic streptococci. Other data are shown in figure 1. He was treated with penicillin for 11 days and discharged on the 17th hospital day. Two weeks later the heterophil titer was 1:1,792 and the antistreptolysin 0 titer 500.

Comment.—It is doubtful if the dual nature of this illness would have been discovered except for the throat culture made on the seventh hospital day. The initial high heterophil titer, low sedimentation rate, and absence of throat pathogens suggest that infectious mononucleosis was established first. There was little enlargement of the mandibular nodes, so common in uncomplicated streptococcic pharyngitis. Certainly, there was no suspicious shift in the neutrophil-lymphocyte ratio to supply a clue.

CASE 2.—A 21-year-old white female was admitted Feb. 26, 1955. For two days she had noted chilly sensations, headache, and sore throat. The tonsils were enlarged and red, with a small amount of gray exudate bilaterally. There was no cervical adenopathy, but there was some tenderness over the anterior cervical nodes. The next day the pharynx was much worse and the mandibular nodes were large and tender. A throat culture showed a heavy growth of beta hemolytic streptococci group A. Posterior cervical adenopathy not present previously, as determined by daily examination, was noted on the eighth day of illness. Laboratory findings are shown in figure 2. She was treated with erythromycin, 1.2 gm. daily, and discharged much improved on the 14th day of illness. The liver and spleen were never felt, and chest x-rays were normal. She was readmitted two days later because of persistent sore throat and extreme fatigue. Throat culture was negative for beta hemolytic streptococci. She improved gradually and was discharged again on her 22nd day of illness. Convalescence was characterized by weakness

and easy fatigability. This made it necessary for her to discontinue part of her studies. A month after discharge the blood cell counts, hemoglobin level, and hematocrit were normal. Sedimentation rate was 16 mm., heterophil titer 1:56, anti-

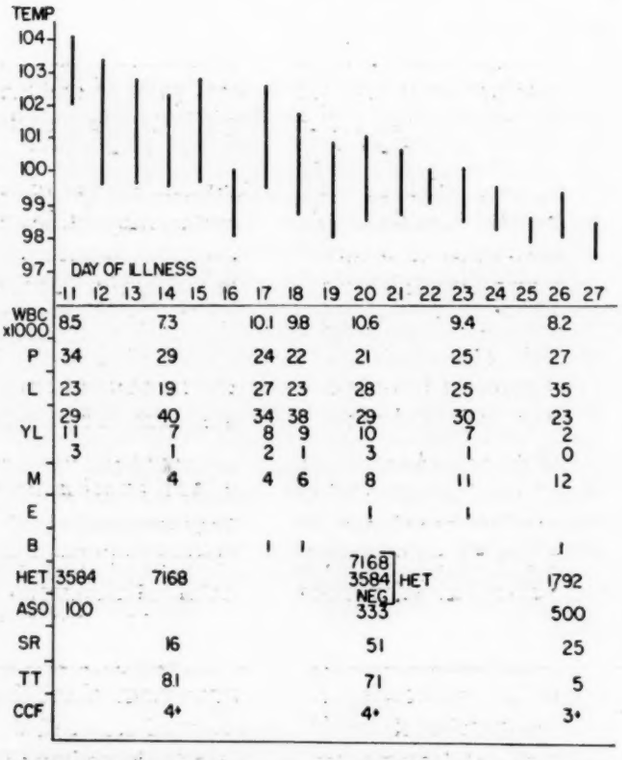

Fig. 1.—Data of patient (case 1) with infectious mononucleosis complicated by the subsequent development of streptococcic pharyngitis. YL refers to young (atypical) lymphocytes classified on the basis of supravital staining technique; from above downward: small, intermediate, and large size. The sedimentation rate was determined by the Wintrobe method. Cephalin-cholesterol flocculation (CCF) reaction in 48 hours. On the 20th day the heterophil titers are on unabsorbed guinea pig and beef cell absorbed serums respectively.

streptolysin 0 titer 166, thymol turbidity 6.1 units, and cephalin flocculation 2+ in 48 hours. Three months after discharge the antistreptolysin titer was 50, heterophil titer was 1:14, and liver function tests were normal.

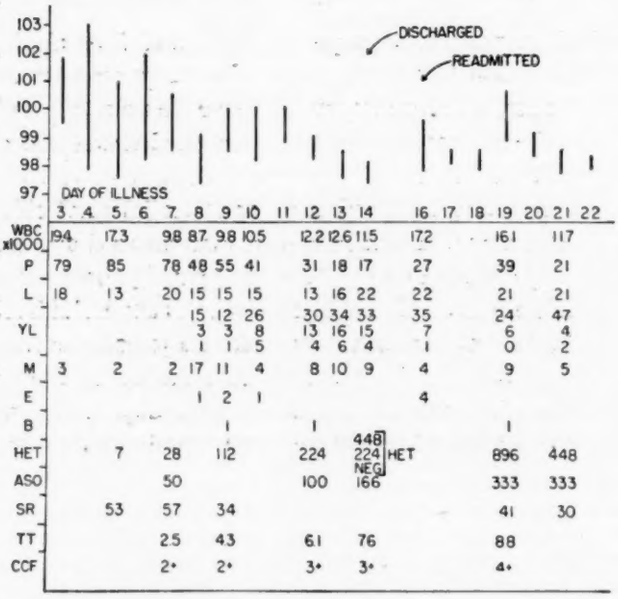

Fig. 2.—Data of patient (case 2) admitted with streptococcic pharyngitis. Posterior cervical adenopathy noted on the eighth day was accompanied by a shift in the differential blood cell count and serologic evidence of infectious mononucleosis.

Comment.—An interesting feature was the sudden shift in the differential blood cell count on the same day that the posterior cervical adenopathy was detected. Two days later the count was highly diagnostic of infectious mononucleosis, over 4,000 young lymphocytes per cubic millimeter, and remained so

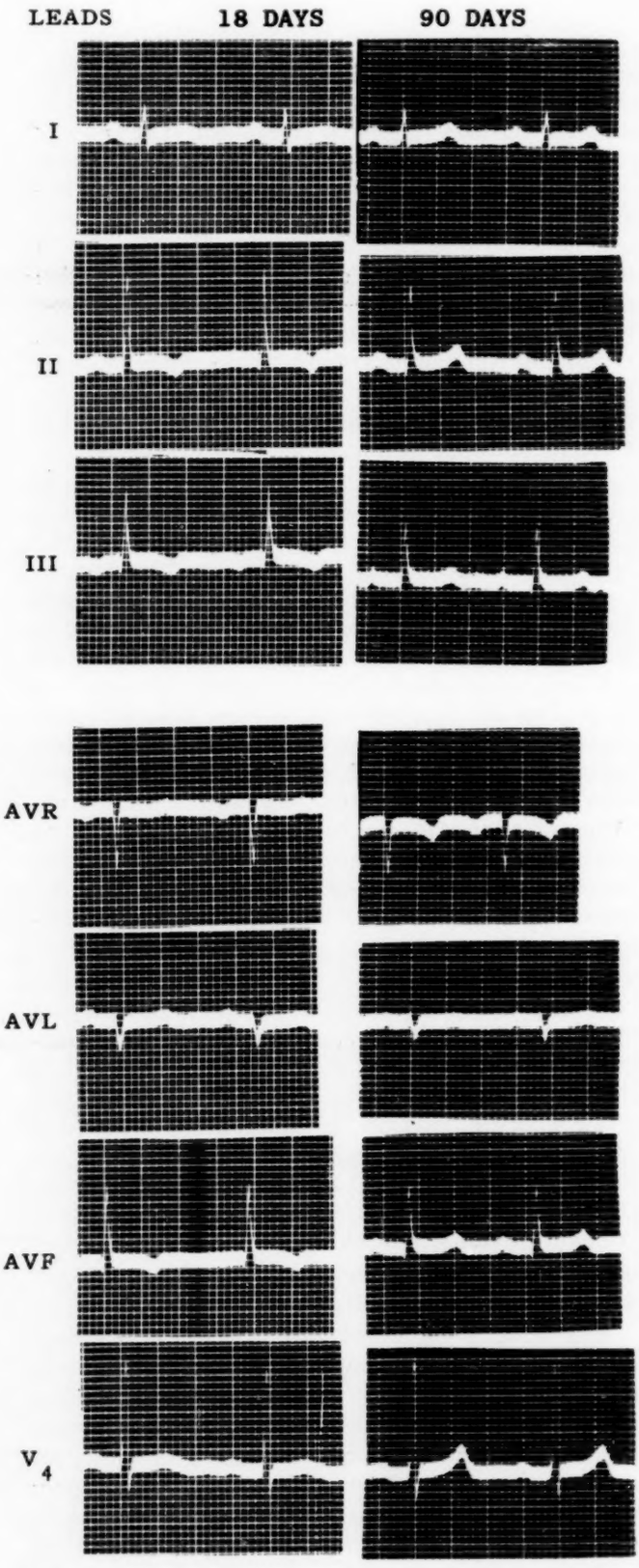

Fig. 3.—Electrocardiograms of patient in case 2. The P-R intervals increased from 0.16 second on the 11th day of illness to 0.20 second later. On the 18th day there were T-wave changes of an order never observed in a case of uncomplicated infectious mononucleosis.

throughout the balance of the illness. The important point is that, from the standpoint of the differential count, all evidence of the coexisting bacterial infection was completely obscured. Nevertheless, the antistreptolysin titers continued to rise. It is obvious that conclusions based on the white blood cell counts alone would hardly tell the whole story.

Aside from the double infection, the chief reason for detailing the report of the patient in case 2 is the magnitude of the electrocardiographic changes (fig. 3). My findings do not support the view that uncomplicated infectious mononucleosis causes frequent flattening and reversal of polarity of the T waves in all limb leads. Briefly, I have found distinct flattening or inverted T waves in lead 3 in 45% of hospitalized patients. Partial restitution often occurs within a week, with normal T waves usually present after two or three weeks. Significant changes in S-T segments or in the T waves of the other limb and precordial leads have not been observed. Usually little or no flattening of T_1 or T_2 has been noted, even with inverted or biphasic T waves in lead 3, as shown in the electrocardiogram of the patient in case 1 (fig. 4). The changes in the patient of case 2 definitely exceed the maximum abnormalities characteristic of uncomplicated infectious mononucleosis. I believe that these disturbances are related to the streptococcic infection.

Comment

It has been noted previously that monkeys experimentally inoculated with streptococci shortly after an infection with influenza virus failed to develop the leukocytosis typical of an initial streptococcic infection.[2] When infectious mononucleosis is established in an individual, a superimposed streptococcic infection may fail to produce even the slightest telltale alteration in the white blood cell counts. When laboratory evidence of streptococcic infection clearly antedates that of infectious mononucleosis, as seen in case 2, the latter infection may cause a sudden and premature termination of the neutrophilia. This dominant influence of infectious mononucleosis, nullifying the ability of the organism to respond with a familiar leukocytosis and neutrophilia, should be kept in mind.

It is not difficult to see how certain omissions can lead to unwarranted conclusions. For example, the physician might feel that a throat culture could be dispensed with in what appeared to be a straightforward case of infectious mononucleosis, as in case 1. Thus, infectious mononucleosis would be incriminated as the cause should any electrocardiographic abnormalities develop. Streptococcic infection should be ruled out by tests more reliable than a blood cell count.

Extensive and precise bacterial studies have been infrequent. What appears to be a careful investigation of the pharyngeal bacteria was recently reported by Campbell.[3] He studied this problem in 66 sporadic cases of infectious mononucleosis seen in a Royal Air Force general hospital in England. He was impressed by finding coagulase-positive micrococci (staphylococci) organisms in 53%. This was in contrast to 4.4% in 158 healthy throats in the same population. He also found hemolytic streptococci alone or in combination with Vincent's organisms (Fusobacterium plauti vincenti and Borrelia vincenti) or micrococci in 42.4% of his patients with infectious mononucleosis. A limited study of this matter in our own hospital during the past two years

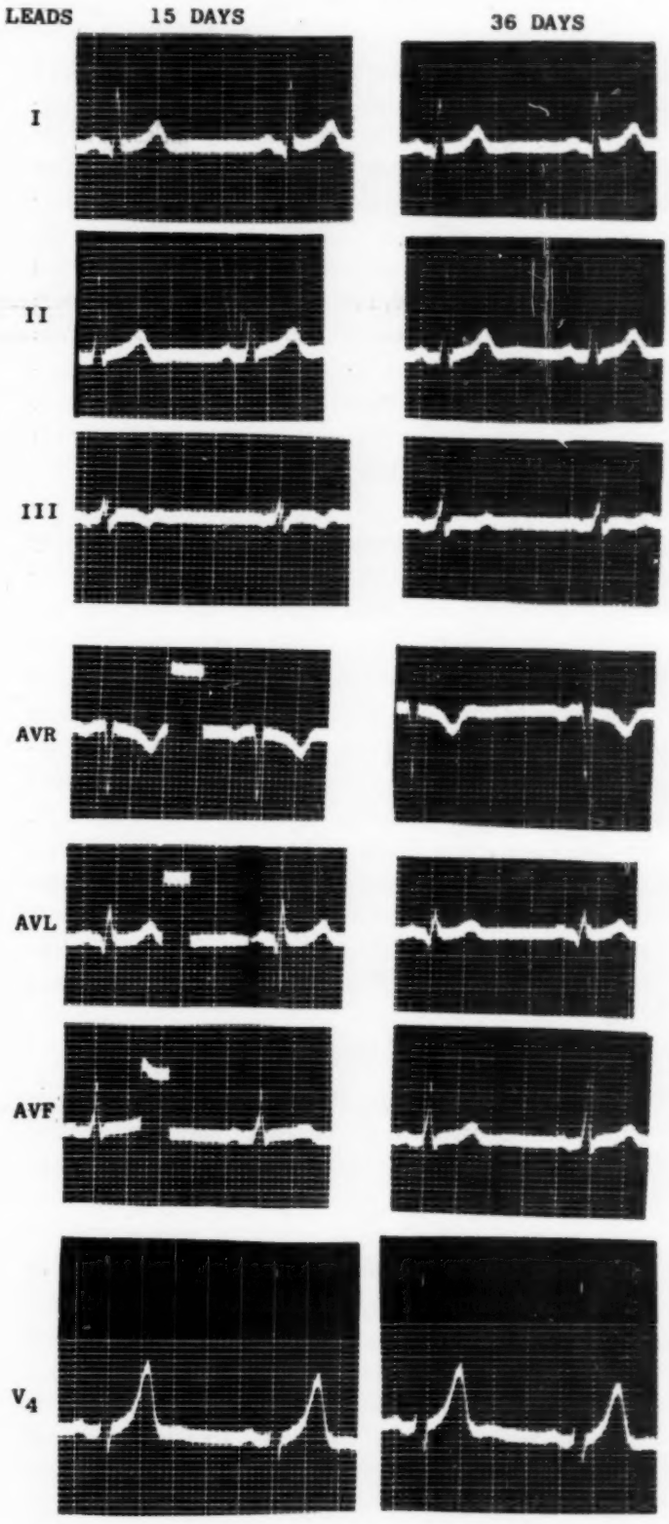

Fig. 4.—Electrocardiograms of patient in case 1. The T-wave changes are confined to leads 3 and aVF. Such findings are also characteristic of uncomplicated infectious mononucleosis.

has shown a lower incidence of both these organisms, as determined by use of blood agar plates. How these findings are related to infectious mononucleosis is not clear.

Electrocardiographic observations of auriculoventricular conduction defects as well as S-T changes in practically all leads have been described in this disease. I am impressed by the fact that some of the patients had a distinct early leukocytosis and neutrophilia, rapid sedimentation rates, or tender mandibular nodes. Throat cultures are seldom reported. In one series of four cases describing electrocardiographic evidence of cardiac complications in infectious mononucleosis, three of the patients had rashes and joint pains.[4] In treating over 500 patients with this disease, I do not recall a single instance in which joint pains played the stellar role, or even shared to any significant degree with sore throat, headache, and malaise in the chief complaint. Furthermore, a rash not due to medication in uncomplicated infectious mononucleosis is extremely rare.[5]

There is no reason to doubt that electrocardiographic abnormalities beyond those I have observed can occur in uncomplicated infectious mononucleosis. On the other hand, it is evident that some examples are probably the result of a superimposed streptococcic infection. Lacking facilities for more exact diagnosis, the sedimentation rate would seem to have considerable merit in detecting cases with pathogenic streptococcic involvement. It is not generally appreciated that infectious mononucleosis does not produce profound changes in the sedimentation rate. My data show that a substantial number of patients with this disease have little or no increase in the sedimentation rate. Even patients with severe cases usually have rates under 35 mm. On the other hand, combined infections usually produce rates in excess of 45 mm. in one hour.

Summary

It is well known that streptococcic pharyngitis is usually accompanied by leukocytosis and neutrophilia. However, it is not so well known that such evidence may be completely lacking when the streptococcic infection develops in a patient with infectious mononucleosis. Aside from failure to make a throat culture, failure to realize this dominant effect of infectious mononucleosis on the blood picture has probably permitted many combined infections to go unrecognized. Some of the bizarre electrocardiographic findings ascribed to infectious mononucleosis are actually the result of unrecognized group A streptococcic infections. The possibility of this complication should be strongly considered when significant S-T segment or T-wave changes appear in leads 1, 2, or V_4 of the electrocardiogram. There is little or no evidence that infectious mononucleosis per se can be responsible for a prolonged P-R interval. I recommend a freer use of throat cultures and antistreptolysin determinations. This evidence is mandatory in eliminating the possibility of a superimposed streptococcic pharyngitis in all atypical cases, especially those with evidence of cardiac or renal complications. The less exacting sedimentation rate has proved to be a worthwhile screening test. In my experience, a sedimentation rate in excess of 35 mm. in one hour is rare in uncomplicated cases of infectious mononucleosis.

Addendum

On Dec. 26, 1955, an electrocardiogram taken of a 19-year-old white male student with concurrent infectious mononucleosis and streptococcic pharyngitis showed sharply inverted T waves in leads 1 and V_3, V_4, V_5, and V_6. He was afebrile at this time. Five days later these waves were upright and have remained so.

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Medical Students in Training.—Frequently, scientific discoveries are ascribed as due to chance and coincidence. Yet in most instances this chance came to one trained in making careful observations and in wondering open-mindedly as to what their possible significance might be. It was not chance that enabled Newton to deduce so much from the impact of the apple on his head. This impact was felt throughout the world because of the significance the observer was able to attach to the observation. No doubt chance had afforded many another with a comparable stimulus with no such far-reaching consequences. The only element of chance came in that this experience should befall an observer qualified to discern its true significance. The limitations are always in the observer, never in the paucity or nature of what is available to be observed. Decision as to whether the primrose by the river's brim is merely a primrose or suggestive of all "that God and man is" resides in the observer. Use of the experimental approach in relation to medicine need not be confined to the laboratory or research effort. All manifestations of disease have a scientific interest if one is sufficiently trained to observe accurately and correctly interpret findings. Through disease, nature is constantly revealing an endless procession of clues that may be of value in unraveling the nature of a process or pointing the way as to how some normal mechanism operates or is related to the function of other parts of the body. In the careful study of a patient, one will encounter on a small scale most of the ingredients that make up a research project. For an adequate control one must substitute a thorough appreciation of what constitutes the normal human being. Some preparation of the student's mind in the experimental approach to learning may go a long way toward developing the faculties on which he ultimately must depend to a large degree as a doctor. One learns by experience and experiment, and these are essential parts of the basis for progress of understanding and knowledge as applied to the individual or the group. Since each student must eventually come to rely on himself for learning, effort can justifiably be expended to provide the background so essential for continuing the learning process indefinitely. This is a fruitful type of training for the medical student regardless of what aspect of medicine may ultimately monopolize his efforts.—Smith Freeman, Ph.D., M.D., a Guided Experience, *Quarterly Bulletin of Northwestern University Medical School*, Spring, 1956.

HYPOPHYSECTOMY IN TREATMENT OF ADVANCED CANCER

Olof H. Pearson, M.D., Bronson S. Ray, M.D., Charles C. Harrold, M.D.
Charles D. West, M.D., Ph.D., Min C. Li, M.D., John P. Maclean, M.D.
and
Mortimer B. Lipsett, M.D., New York

• Surgical ablation of the hypophysis has been carried out in 79 patients with advanced cancer. The most satisfactory approach was by way of a right frontal craniotomy. It was used in 53 instances.

Most patients developed polyuria within 24 hours after a complete ablation; amenorrhea followed in the female patients, and testicular atrophy was observed in two males. Unless replacement therapy was kept up, adrenal insufficiency appeared within two to seven days and hypothyroidism within four to eight weeks.

Objective remission was obtained in 21 out of 41 cases of mammary cancer in which evaluation was possible. Generalizations proved difficult for several reasons, especially because other forms of ablative surgery had in some cases preceded the hypophysectomy and because some patients were still in remission at the time of the report. The selection of patients for hypophysectomy will remain unsatisfactory until the endocrine factors concerned are more completely determined.

During the three-year period from March, 1952, through March, 1955, hypophysectomy has been performed in 79 patients with advanced neoplastic disease. The rationale for this experimental study was based on the concept that the growth of certain human neoplasms might be dependent upon pituitary hormones. Breast and prostate cancers were of particular interest, since the growth of these tumors in many patients can be altered by certain changes in hormonal environment.

Until 1952, there had only been a few sporadic attempts to perform total hypophysectomy in man.[1] Luft and Olivecrona [2] were the first to report a concerted effort to determine the effects of hypophysectomy in patients with neoplastic disease. Objective improvement after hypophysectomy was observed in two women, one with malignant chorioepithelioma and one with metastatic breast cancer. Recently, these investigators [3] have reported the results of hypophysectomy in 37 women with metastatic breast cancer. Of 30 patients who could be evaluated, about 50% obtained improvement for periods lasting from 3 to 20 months. In none of these patients had oophorectomy and adrenalectomy been carried out prior to hypophysectomy, and thus it is impossible to determine whether the remissions were induced by removal of pituitary hormones or by suppression of gonadal and adrenal function. Other workers [4] have reported remissions after hypophysectomy in women with breast cancer.

We have [5] reported objective remissions after hypophysectomy in two women whose breast cancer had relapsed after oophorectomy and adrenalectomy. Administration of beef pituitary growth hormone to one of these patients appeared to accelerate the growth of the tumor, as measured by calcium excretion studies. These observations suggest that a pituitary hormone (or hormones) may be an important growth factor for some mammary cancers. This paper presents our experience with hypophysectomy in 79 patients with advanced cancer.

Procedure

Surgery.—A right temporal craniotomy was the first approach used by one of us (B. S. R.) to remove the pituitary gland. Sixteen patients were operated on by this approach. Nine patients had complete hypophysectomy, as judged by function tests and postmortem examination. There were two operative deaths. Morbidity, consisting of injury to the third cranial nerve (three cases), visual field defects (four cases), and postoperative convulsions (three cases), was high. This approach was abandoned in favor of a transfrontal craniotomy.

In the period in which we were attempting complete hypophysectomy through a right temporal craniotomy, one of us (C. C. H. [one patient was operated upon by Dr. Oscar Hirsch, who used a transnasal, transsphenoidal approach]) was also exploring the feasibility of accomplishing it through a transsphenoidal route. Theoretically, this seemed to have a possible advantage over the intracranial route, in that the anterior, and sometimes inferior, wall of the sella turcica could be removed and the hypophysis reached on a wider front. Actual experience with 10 cases, however, showed that the disadvantages confronting operative execution of this approach were extremely great. Regardless of whether the route to the sphenoid was transnasal or transantral combined with transnasal, it ultimately ended in a deep hole whose diameter could not possibly exceed 2.0 cm. This drawback could and would have been tolerated if the subsequent steps of the procedure had been more rewarding. However, the removal of the posterior wall of the sphenoid sinus, and particularly the incision into the anterior dural lining of the sella turcica, was always fraught with the hazard of entering the plexus of venous channels that encircled and traversed this area. Success or failure in obtaining complete hypophysectomy depended largely on one's ability to avoid these channels. A factor of negligible significance in transsphenoidal partial hypophysectomy, it proved to be of great import in complete

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Dr. West is an American Cancer Society Scholar, Dr. Li a Damon Runyon Research Fellow, Dr. Maclean a McGlaughlin Fellow, and Dr. Lipsett a U. S. Public Health Service Fellow.

The beef pituitary growth hormone used in this study was supplied by the Armour Laboratories, Chicago.

hypophysectomy, for in the latter procedure a "window" as large as possible was needed to visualize the pituitary fossa, avoid the optic chiasm, and secure complete removal of the pituitary gland, which, more often than not, was found adherent to the walls of the sella. Caustic liquids, of great value in destroying these residual pieces of tissue when administered through an intracranial route, could not be used safely through the extracranial route. Meningitis, which contributed to four of the six postoperative deaths, was obviously of great significance, but in the later cases was successfully controlled by prophylactic administration of appropriate sulfonamides and antibiotics. Hypophysectomy was complete in six cases. When it was found that complete hypophysectomy could be carried out with greater efficiency through the frontal intracranial route, the transsphenoidal approach was discarded.

Effect of Hypophysectomy on Neoplastic Disease

Disease	No. of Cases	No Response	Objective Remissions
Breast cancer			
Evaluated	41	20	21
Evaluation impossible *	15	..	..
Recent surgery	2	..	..
Prostatic cancer			
Evaluated	4	3	1
Evaluation impossible *	1	..	..
Choriocarcinoma			
Evaluated	2	2	0
Evaluation impossible *	3	..	..
Malignant melanoma			
Evaluated	4	4	0
Evaluation impossible *	3	..	..
Thyroid carcinoma			
Evaluated	1	1	0
Reticulum cell sarcoma			
Evaluated	1	1	0
Ovarian carcinoma			
Evaluation impossible *	1	..	..
Hypernephroma			
Evaluation impossible *	1	..	..
Total	79	31	22

* In 24 patients it was impossible to evaluate the effects of hypophysectomy because of operative deaths in 11, grossly incomplete hypophysectomy in 9, and death from cancer too soon after surgery in 4.

Fifty-three patients were operated on via a right frontal craniotomy by one of us (B. S. R.). This approach has proved to be quite satisfactory. The technique is briefly as follows: Anesthesia is induced with thiopental (Pentothal) and maintained with intratracheally administered ether. Hypotension is maintained with trimethaphan (Arfonad) camphorsulfonate. An opening is made in the right frontal bone, so placed as to permit retraction of the right frontal lobe from the floor of the frontal fossa and also to permit direct vision of the hypophysial stalk between the optic nerves. Retraction of the brain is facilitated by drainage of cerebrospinal fluid through a spinal needle. The right olfactory nerve is sectioned. The pituitary stalk is coagulated and divided, and the opening in the diaphragma sellae through which the stalk passes is enlarged; through this opening the pituitary gland is removed. Removal is accomplished in piecemeal fashion with the use of small, sharp ring curets of several sizes and shapes. The cavity of the sella turcica is then treated with Zenker's solution in order to devitalize any small remaining fragments of the gland that might have escaped detection. The Zenker's solution is applied to the walls of the sella turcica by injecting the fluid through a tube ending in the center of a small rubber sponge that is packed into the cavity. Over a five-minute period the fluid is slowly injected, while it is sucked away from the sponge to prevent damage to adjacent tissues. The cerebrospinal fluid is replaced through the spinal needle as the cranial wound is closed.

There were three operative deaths in this series of 53 cases. Morbidity was encountered in seven patients; three had visual field defects of a minor nature; two patients developed bitemporal hemianopsia, one of whom lost most of her vision in the left eye (neither patient was incapacitated); one patient developed a transient hemiplegia; and one patient developed third nerve paresis. Three patients were considered to have incomplete hypophysectomies on the basis of function tests. Ten patients have come to autopsy. No evidence of residual pituitary tissue could be found in nine. In one patient there was a microscopic residue of pituitary cells. Other patients who have been evaluated appear to have had complete hypophysectomy on the basis of function tests.

Hormonal Replacement.—All patients were given adrenal replacement therapy during and after surgery. Our routine procedure is as follows: 300 mg. of cortisone acetate given intramuscularly in six divided doses 12 to 16 hours preoperatively; 100 mg. of cortisone given orally on call to the operating room; 50 mg. of cortisone given intramuscularly every 4 hours postoperatively for the first 24 hours; and cortisone given orally as soon as the patient is able to eat, the dose being tapered to a maintenance level of 25 mg. every 12 hours at the end of one week. Patients have also been satisfactorily maintained with an intravenous drip of corticotropin (patients with adrenal glands).

Most patients develop polyuria within 2 to 24 hours postoperatively.[6] An intravenous infusion of 5% glucose in water is given at the rate of 100 ml. per hour. A catheter is inserted into the bladder, and the urine volume is measured at two-hour intervals. If the urine volume exceeds 150 ml. per hour, vasopressin (Pitressin) tannate in oil (2 to 5 units intramuscularly) is given, which usually controls the polyuria for periods of one to three days. If polyuria persists after one to two weeks, nasal insufflation of posterior pituitary powder two or three times a day is the most convenient method for control. Thyroid replacement therapy has not been given until at least four to eight weeks postoperatively. When hypophysectomy is complete, clinical manifestations of myxedema usually appear within one to two months; 120 mg. of desiccated thyroid daily has adequately relieved the myxedema. Gonadal replacement therapy has not been used in our patients.

Function Tests to Determine Completeness of Hypophysectomy.—Tests for thyroid, adrenal, and gonadal function appear to be useful in determining the completeness of hypophysectomy. When thyroid hormone is withheld, clinical and laboratory myxedema usually develops within four to eight weeks postoperatively.[7] With incom-

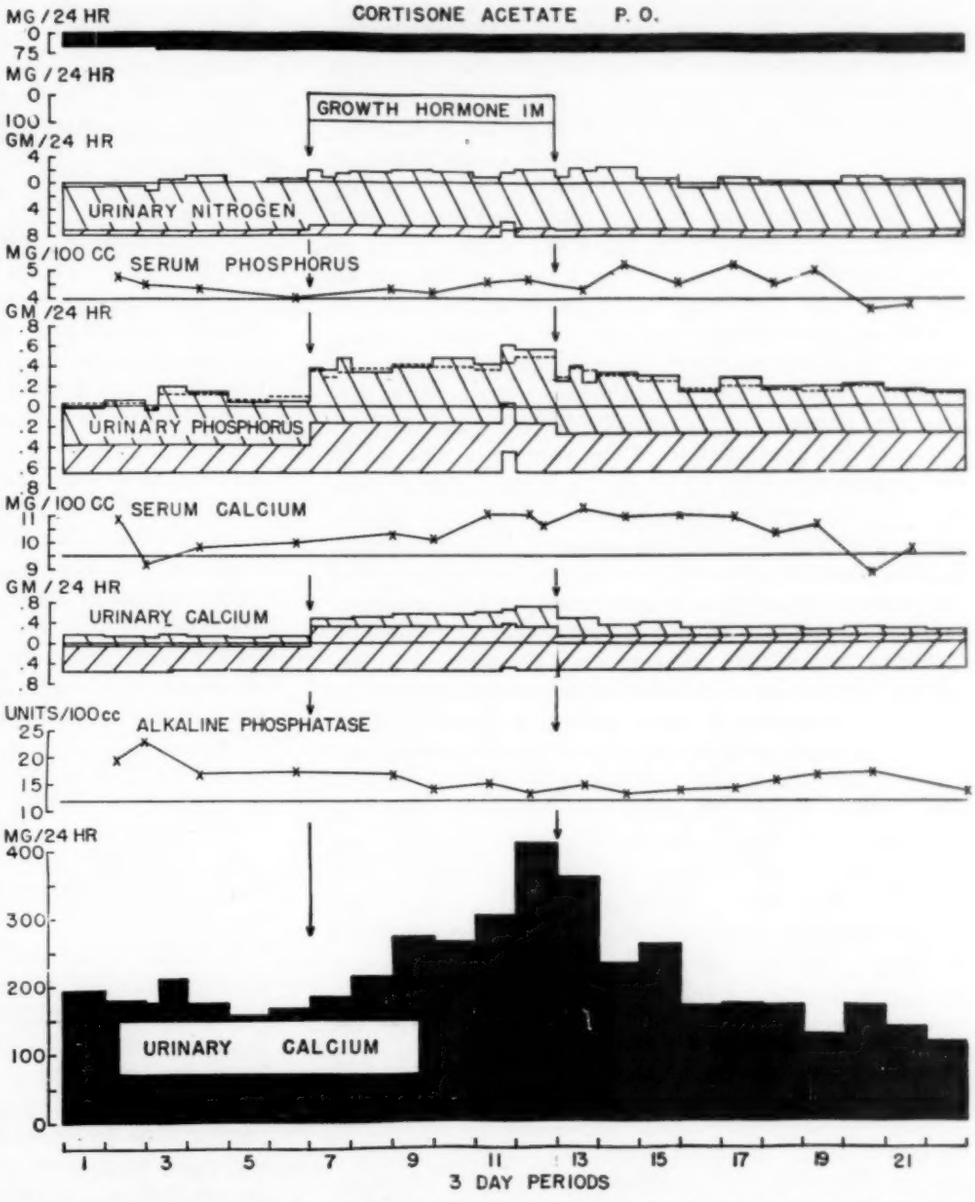
plete hypophysectomy, radioactive thyroid uptake and serum protein-bound iodine level do not change or fall transiently and myxedema does not develop. If cortisone or corticotropin replacement therapy is withdrawn, the completely hypophysectomized patient will develop adrenal insufficiency or adrenal crisis within two to seven days. With incomplete hypophysectomy, adrenal insufficiency does not develop when replacement therapy is withdrawn.

In two males, testicular atrophy was apparent within a few weeks postoperatively. In females, menstruation ceases and the vaginal smear and endometrium become atrophic after hypophysectomy. We have not had sufficient experience to determine whether gonadal atrophy occurs after partial hypophysectomy. Urinary gonadotropin excretion becomes unmeasurable in the completely hypophysectomized patient. The development of myxedema and adrenal insufficiency in the absence of replacement therapy and the disappearance of gonadotropins from the urine constitute reliable criteria for complete hypophysectomy. Postmortem examinations have correlated well with these tests so far. The development of diabetes insipidus after hypophysectomy is not dependent upon the presence or absence of the anterior pituitary gland and therefore is of no help in determining the completeness of hypophysectomy.

Objective Response.—In evaluating the effect of hypophysectomy on the neoplastic disease, only objective improvement, as evidenced by regression or cessation of growth of the tumor, is considered a significant effect. The patient is considered to have failed to respond to hypophysectomy if there is progression of any existing lesion or if there is development of a new lesion within two months after operation. An objective remission is considered to have ended as soon as there is evidence of progression of old lesions or the appearance of new ones. X-rays of the lungs and skeleton were taken at two-month intervals, in addition to careful physical and laboratory examinations, in order to evaluate the status of the disease. Symptomatic improvement was not used as evidence of objective change.

Results

The table summarizes the results of hypophysectomy on tumor growth in 79 patients. In 24 patients it was impossible to evaluate the effects of hypophysectomy because of operative deaths in 11, grossly incomplete hypophysectomy in 9, and death from cancer too soon after surgery in 4. Of the remaining 55 patients, 22 obtained objective remissions, 31 showed no response, and 2 who have had recent surgery cannot yet be evaluated.



Nitrogen, phosphorus, and calcium balance during growth hormone administration to a woman with metastatic mammary cancer, who had had oophorectomy, adrenalectomy, and hypophysectomy. Dietary intake is plotted downward from the zero line. Fecal and urinary output are plotted from the dietary intake line.

Breast Cancer.—Of 41 patients with metastatic breast cancer who could be evaluated, 21 obtained objective remissions from hypophysectomy and 20 failed to respond. The average duration of the remissions at present is 6.5 months, with 9 of 21 patients still in remission. Regressions of primary inoperable lesions and of bone, bone marrow, pulmonary, pleural, intracranial, spinal cord, lymph node, and skin metastases have been observed among this group of patients. There were 11 patients

who had previously undergone castration and adrenalectomy, of whom 10 had had remissions from either or both of these procedures. Five of these 11 patients obtained further objective improvement from hypophysectomy. One patient failed to respond to all of the three ablative procedures.

Beef pituitary growth hormone was administered to one patient who had had three operations and who was in remission three months after hypophysectomy. The results of this study are presented in the figure. This patient had numerous osteolytic metastases that had shown evidence of recalcification at the time of this study. She was maintained on 50 mg. of cortisone by mouth daily as the only hormonal replacement therapy. Growth hormone, 100 mg., was given intramuscularly daily for 18 days. During the control period, the patient was in slightly negative calcium balance and the urine calcium level was at the upper limits of normal. When growth hormone was administered, there was a steady rise in urine calcium excretion, reaching a peak of 408 mg. on the 15th to the 18th day. There was a negative calcium and phosphorus balance, and the loss of these elements was in the same ratio as they exist in bone. When administration of growth hormone was stopped, the negative calcium and phosphorus balances declined toward the control level. No exacerbation of the symptoms was noted during administration of growth hormone. Growth hormone has been given to four patients with chronic lymphocytic leukemia who had no evidence of bone disease. In these patients, growth hormone failed to produce a rise in urine calcium excretion beyond the normal range. These observations have been interpreted to indicate that growth hormone induced bone destruction in the patient with metastatic breast cancer, presumably as the result of stimulation of tumor growth in bone.

Of 24 patients in whom hypophysectomy was the primary ablative treatment, 15 obtained objective remissions. Six of the 15 patients have suffered relapses; 2 at nine months, 2 at eight months, and one each at six and five months. Eight patients are still in remission from 3 to 13 months after hypophysectomy. One patient died two months after hypophysectomy of a cause unrelated to cancer. The one male patient with metastatic mammary cancer obtained an objective remission from hypophysectomy. This patient had previously failed to respond to estrogens, orchiectomy, x-ray therapy, and cortisone. His remission lasted 12 months after operation. After hypophysectomy, administration of growth hormone failed to exacerbate the disease, whereas corticotropin induced a transient stimulation of tumor growth. Four premenopausal women with breast cancer who had failed to respond to oophorectomy also failed to respond to hypophysectomy. Further observations are needed to determine whether women with non-estrogen-dependent mammary cancer [8] can respond to hypophysectomy.

Other Types of Cancer.—Of four patients with prostatic cancer whose disease was in relapse after orchiectomy and estrogen therapy, one obtained an objective remission from hypophysectomy. The remission lasted for 15 months, followed by relapse. In this patient there was a prompt fall in acid phosphatase to normal levels after hypophysectomy and there was regression in the size of the primary lesion. Prior to hypophysectomy, this patient had a complete paraplegia at the level of T-6 due to tumor invasion of the spinal canal, which had progressed after laminectomy and x-ray therapy. Within two months after hypophysectomy he regained bladder and rectal control and there was a partial return of motor power in his legs. Of four patients with malignant melanoma who could be evaluated, all showed steady progression of tumor growth after hypophysectomy. The disease was very far advanced in these patients, and they survived for only a few months after hypophysectomy. Two patients with embryonal carcinoma of the testes who excreted high titers of chorionic gonadotropin in the urine failed to show any improvement after hypophysectomy.

Comment

Transfrontal hypophysectomy is an established surgical procedure that can be performed without great risk. The majority of the patients in this series were in an advanced stage of their disease, and many were critically ill. Nevertheless, most patients tolerated the procedure well and were ambulatory, eating and taking medicaments by mouth within 24 to 48 hours postoperatively. The hypophysectomy-induced remissions in women with breast cancer whose disease had relapsed after oophorectomy and adrenalectomy suggest that a pituitary hormone (or hormones) may be an important growth factor for the tumor. The effects of growth hormone administration to one of these patients lends further support to this concept. It is possible, however, that some of these patients had accessory adrenal glands and that the improvement after hypophysectomy may have been due, in part, to the suppression of function of these glands.

Since hypophysectomy induces profound suppression of the function of the ovaries and adrenal glands, it is theoretically possible that this procedure may produce a summation of the beneficial effects of oophorectomy, adrenalectomy, and hypophysectomy performed in sequence.[9] Further observations are needed to determine this.

It would appear that the growth of certain breast cancers is unaltered by changes in the hormonal environment. No satisfactory means of selecting patients for hypophysectomy has been found as yet. Patients who have obtained a favorable response to oophorectomy or to androgen therapy are likely to have a favorable response to hypophysectomy. Failure to respond to androgen or estrogen therapy does not indicate that the patient will fail to respond to hypophysectomy. Four premenopausal women who failed to respond to oophorectomy subsequently failed to respond to hypophysectomy. Further observations of the effects of hypophysectomy in patients with non-estrogen-dependent mammary cancer [8] will be of interest as a possible means of selecting patients for hypophysectomy.

Summary

Hypophysectomy in man has been demonstrated to be a practical procedure that can be performed without great risk. Hypophysectomy induced objective remissions in 21 of 41 patients with advanced breast cancer who could

be evaluated. Some breast cancers may be dependent upon a pituitary hormone (or hormones) for their growth. Further experience is required to determine whether primary hypophysectomy in patients with breast cancer can produce a summation of the beneficial effects of castration, adrenalectomy, and hypophysectomy performed in sequence. One of four patients with prostatic cancer, whose disease was in relapse after orchiectomy and estrogen therapy, obtained an objective remission from hypophysectomy.

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THE PSYCHIATRIC VIEWPOINT IN TRAINING RESIDENTS

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Two responsibilities have been delegated to me in opening the discussion of the psychiatric viewpoint in training of residents. The first is to express the thoughts of a psychiatrist as he views residency training in clinical specialties other than psychiatry, and the second is to give some opinions on the psychiatric orientation that should be included in the training of residents in internal medicine, surgery, pediatrics, neurology, and other specialties. Undertaking the initial task, that of expressing views on the training of residents in other specialties, demands a degree of temerity. The psychiatrist practicing in the general hospital or clinic is not in a particularly advantageous position to observe the training of residents in other specialties. He is often called upon in consultation or to assist in teaching groups, either by an associate in another specialty who has an unusual interest or understanding of psychiatric or emotional disorders or by his opposite, the least comprehending specialist, who needs assistance in extricating himself from some desperate patient problem.

The psychiatrist's opinions, then, are liable to distortion, favorable or unfavorable, depending upon the milieu in which he most frequently contacts his associates and due to his limitations in observing the day-to-day activities of his colleagues practicing other specialties. I have a high respect for the intuitive day-to-day practice of the physician and surgeon, a respect gained through the opportunity of observing their management of patients in the course of a medical and surgical residency and through casually sitting in at later periods. There are opportunities in some institutions for closer contact between the psychiatrist and his colleagues in other fields. He may attend and regularly participate in rounds with his colleagues, he may have nonpsychiatric residents assigned full time for periods on his own service, or he may take part in various conjoint teaching activities. In such circumstances the opportunity is afforded of appraising much more clearly the strengths and weaknesses of resident training, particularly as they relate to that constant aspect of medical practice, the patient-physician relationship.

In addition, there is the accumulated and published experience of psychiatrists who have attempted to instruct residents from other services as a part of programs in psychosomatic or comprehensive medicine. In reviewing the published reports and in discussion with them, one is impressed by the emphasis placed upon the difficulties encountered in the efforts to inculcate psychiatric

• *The need for continued training for recognition and treatment of pathological behavior remains unchanged. Specialists in other fields than psychiatry need such training as a means of better evaluating and treating the ever-growing personality problems of our times.*

The pressure for instruction in the principles of dynamic psychiatry will not be lessened by the introduction of new drugs such as the tranquillizing agents. These alter the quantitative expression of anxiety and panic but do not modify learned behavior patterns. Until the teaching of psychiatry on the undergraduate level becomes adequate, it will be necessary to give thought to psychiatric training in the residency programs on other services.

The resident's contact with psychiatry should make him more aware of and more capable of treating the patient's anxieties, weaknesses, and personality traits and should bring to his consciousness the experiences of grief, sadness, rage, and panic that attend a multitude of events of the everyday life of the patient.

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Read before the Conference on Graduate Medical Education, Annual Congress on Medical Education and Licensure, Chicago, Feb. 11, 1956.

concepts, to delineate the varieties of resistance observed, and to discuss seriously means for overcoming this resistance.

Types of Resistance

There are several kinds of resistance. One is concerned with the inability of the resident in medicine or surgery to accept exposure to psychiatric instruction as a significant contribution to his learning experience and to his future success as a practitioner of his specialty. He frequently regards his contact as another burden in an already heavy schedule. This is particularly so when the resident is devoted to his own preconception of a primary goal that excludes the very real possibility that he will have to deal with an emotionally disturbed patient. His response is often negative, unless the psychiatric instructor is able to captivate his interest through some unusual aspect of his own personality or is able to demonstrate, often by a stroke of good luck, a brilliant modification of symptomatology effected through a psychotherapeutic process.

It is axiomatic that the learning process is facilitated by the identification of the student with his instructors. The large classes and remote contact that typify much of undergraduate medical education do not allow for such experiences in the majority of students. The experiences of residency, with close and continuing contact between the resident and his instructors, offer a significant opportunity for instilling in the resident attitudes toward his patients that will have continuing influence on his capacity to perform as a successful practitioner. This success is predicated on the ability to establish a proper diagnosis and apply the appropriate treatment, which includes the ability to respond to the emotional demands of the patient and a knowledge of certain principles of personal interaction. None of these abilities can flourish if one denies the existence of those varieties of somatic dysfunction that occur as a consequence of emotional disturbance.

The exposure of medical or surgical residents to psychiatric instruction is often much too brief for them to identify with the instructor in this field. The natural affinity is to the instructors in the specialty of their own choice, who often induce in the residents attitudes toward patients and their emotional needs that may not be eradicated by brief exposure to a psychiatric service.

Many attending physicians and instructors who repeatedly demonstrate their complete absorption in the precise medical management of a particular illness, to the exclusion of consideration of the anxieties suffered by patients in connection with the illness, instill in their residents myopic attitudes toward emotional components of disease just as surely as a parent stamps certain aspects of his personality upon his own children. Some surgeons focus solely on the technical aspects of their specialty and fail to show their appreciation of the significance of the surgical procedure to the patient as a person and the humane means that might be utilized to allow acceptance of the needed procedure with a minimum of anxiety. Here again the surgical residents come to deny or ignore, as they watch and identify with the attending physicians, the concept that emotional factors are an important consideration in the diagnosis or management of the patient's condition. Thus the stage is set by the attending staff for the residents in their specialties to commence practice with an inability to discriminate diagnostically between disease due to tissue pathology and that secondary to emotional dysfunction, to recognize and manage the anxieties of their patients, or to estimate the benefits to be obtained through requests for psychiatric consultations.

It is not my intention to mention more than briefly those largely personal and unconscious resistances to the understanding of the emotional disturbances of others that play a considerable role in the difficulty of instructing residents. In instances in which the patient's problems touch too closely upon those of the resident, whether he be a psychiatric resident or not, anxiety is induced, with consequent production of some form of resistance to the patient's problems. These attitudes are sometimes offshoots of early training at home, neurotically repetitive and fixed, and can be modified only by psychotherapy and not by changes in the learning process. These are, therefore, beyond the scope of this discussion.

The other major weakness the psychiatrist may note in considering residency training in other clinical specialties is the failure on the part of many chiefs of service to overtly take notice of the frequently repeated statement that a high proportion of patients entering the hospital and the clinic have either primary or secondary psychic disturbances. It might be expected that the residents would be informed seriously of the facts of clinical practice before being plunged into its depths. On this basis alone, residency training programs might include a period of training on the psychiatric services in the general hospitals. Yet only a few hospital residency programs are based on this point of view. A year of general medical training before entering the specialty is required of the psychiatric resident by many progressive directors of psychiatric residency training programs. In addition, during training the psychiatric resident is frequently assigned a period on a neurological service. Psychiatrists, in their requirements for specialty training, appear to be more insistent on the necessity of their trainees having a broad perspective than many directors of residency programs in medicine, pediatrics, and neurology.

Value of Psychiatric Training

What is the learning experience that residents in other specialties will obtain if they are attached to a psychiatric service for a period of time or are exposed to psychiatric teaching in the course of their residency training? The experience in psychiatry should bring to them a knowledge of a different order from that to which they are exposed elsewhere.

From learning on the psychiatric service the technique of the open interview and its emotional connotations as well as a formula for analysis of the material brought out in the family and developmental history of his patients, the resident should develop the capacity to estimate the relationship of the past to the current conflicts of the patient and to determine whether neurotic problems are potentially operative in the current illness. He may, if endowed with some perspicacity, develop an understanding and tolerance of the patient's weaknesses and unfor-

tunate personality traits. His contact with psychiatry should make him more aware of the anxieties that attend medical and surgical treatment and should bring to his consciousness the experiences of grief, sadness, rage, and panic, with their widespread psychosomatic expressions, that attend a multitude of events of the everyday life of his patients. It is hoped that the exposure will lessen to some degree the inhibitions that one observes in many physicians in their ability to hear about and to tolerantly accept the sexual difficulties that bring many patients to their doors and to respond to such problems on sound biological grounds rather than through the emotional responses laid down through the physician's own family and cultural training.

In the course of exposure to psychiatry, the resident should develop an awareness of those problems that may be managed by a person in his own specialty and those that should be referred to a qualified psychiatrist or psychoanalyst. He may be led to respect the capacity of many medical men to provide long-continuing and adequate support to a variety of neurotically or even psychotically disturbed patients and to do this without apologizing for the measures that are utilized. He should come to understand the varying capacities of the practicing psychiatrist and medical psychoanalyst and should develop some acumen in referring patients to individuals in these fields on the basis of their special talent for particular therapeutic procedures.

Finally, training on the psychiatric service should bring to the resident a full understanding of the patient-physician relationship. This understanding includes not only an appreciation of the role of the physician as expected by the patient and the community but also the more complex and more important comprehension of the patient-physician relationship and its distortions through the mechanism of transference. The transference relationship consists in the capacity of the patient to distort his view of the physician in terms of his own experiences with other significant people, including physicians, and to behave according to these preformed attitudes. A clear understanding on the part of the physician of his own role and of the possibility of distortion in the mind of the individual patient would prevent many of the disastrous relations existing between patient and physician. It would also help to explain why a physician will sometimes attain a spectacular therapeutic success or suffer an unwarranted rejoinder that is not related to the chemotherapeutic or surgical treatment originally prescribed.

Providing the Training

In my experience, one method of providing psychiatric training for residents is assignment to a psychiatric service for a definite period. This is clearly impossible in small hospitals where psychiatric inpatient and outpatient services do not exist. Nevertheless, it is worth discussing briefly, as in many ways it offers an optimum experience. The length of time required to bring some measure of success to the experience of brief psychiatric training for residents from other services should be four to six weeks in a year's general residency training program. A six-month period is not too extensive in a three-year residency training program. It is desirable that the resident be assigned to an active psychiatric service in a general hospital during the period in which he is to receive his psychiatric experience. He should be required to attend to patients in the same manner as a psychiatric resident, to engage in their conferences, and, if the possibility arises, to participate under careful and close supervision in active, brief treatment of several patients.

A dubious expenditure of residency time is likely to result if the resident is assigned to a psychotic ward throughout. Of course, there a resident will learn something of the psychoses and their management, the process of diagnostic interviewing, and the patient-physician relationship; but the variety of neurotic and psychopathic disorders that will appear in patients who will come to his office day by day may not be found in such a hospital environment.

For the medical, neurological, or pediatric resident, psychiatric training should be invaluable. Some may argue that residents in all specialties should be required to spend a period of time in psychiatric training. However, many physicians shy from psychiatric experience because of deep-seated personal anxieties. If exposed, their anxieties may well be increased and their attitudes toward those patients who come to them with psychiatric disabilities may actually be worsened. Here we need to defer judgment to those who now have the opportunity of observing the outcome of exposure of personal conflicts where psychiatric training is required in a general residency training program.

There is another argument, however, against the enforced psychiatric training of all residents. This argument has to do with the current lack of psychiatrists; most psychiatric resident training programs would be overwhelmed if such a responsibility were now thrust on them. Furthermore, many psychiatrists are not sufficiently experienced or trained to hold their own in a general hospital setting. Again, it is unlikely that the results of such experience will be worthwhile if there is no opportunity for the incoming medical and surgical residents to respect and eventually to identify with the attending psychiatrist. Too often we see psychiatrists who are versed in their own fields but are incapable of serving on a general hospital service due to their weak knowledge of the management of acute medical and surgical problems, their inability to sense the importance of the rationale of treatment provided by other services in the treatment of the patient, and in their limited ability to convey in intelligible terms the meaning of their consultative and therapeutic work.

Comment

It is to be hoped that eventually the great improvement that has occurred in the teaching of psychiatry on the undergraduate level may reduce the pressures for psychiatric training in the residency programs on other services. Some may now believe that, with the introduction of the tranquillizing agents, the anxieties of most patients may be managed capably by the internist, neurologist, or surgeon and that the pressure for instruction in the principles of dynamic psychiatry are lessened. While these drugs significantly alter the quanti-

tative expression of anxiety and panic, they do not modify learned behavior patterns. Our knowledge makes us aware of the fact that pathological patterns of behavior contribute to illness in succeeding generations. From the standpoint of therapeutics and preventive medicine, the need for continued training for recognition and treatment of pathological patterns of behavior remains unchanged. The need demands that psychiatric training of specialists in other fields be expanded as a means of better evaluating and treating the ever-growing personality problems of our times.

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RESIDENT TRAINING IN A NONUNIVERSITY HOSPITAL

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• Good residency training can be carried on in good community hospitals. These must be well-organized and well-equipped, must have good departments of pathology and radiology, and in general must provide an adequate background for a real educational experience; but the success of the training program will depend on the efforts of the active staff.

Smaller hospitals may occasionally be able to establish satisfactory residencies in single specialties such as anesthesiology or general practice. Larger hospitals sometimes appoint a full-time director of medical education to organize and supervise intern and resident training.

The first duty of a physician in private practice is to his patients, but he can still do a creditable job in clinical teaching and so improve the caliber of his own work. A creditable residency program can be carried on in a well-conducted community hospital if, and only if, it has the full support and participation of the active staff.

In that great poem "The Dispensary," written by Sir Samuel Garth in about the year 1700, the Venerable Sage addresses Hygeia, the Goddess of Health, as follows: "With just resentment and contempt, you see / The foul dissentions of the faculty. / How your sad sickening art now hangs her head, / And once a science, so become a trade. / Her sons ne'er rifle her mysterious store, / But study *Nature* less and *lucre* more."

This is indeed a poor opinion of medical teachers and practitioners of that day that Dr. Garth expresses. I trust that we have advanced an appreciable distance from the standards of those early years and seldom, if ever, see medical faculties torn by "foul dissentions" or practitioners interested mainly in "money-grubbing." Yet we can take from these lines that I have quoted a hint as to the problems that beset residency training in the university hospital on the one hand and in the nonuniversity community hospital on the other. In the former instance, we have the necessity of integrating the residency program with the undergraduate teaching of the medical school and the plans of the various departments with their multiple ambitions and demands. Though "foul dissentions" do not result, there are plenty of problems and personalities that have to be considered, as any dean can testify. The nonuniversity hospital, on the other hand, without undergraduate teaching and class schedules to consider, has as a rule a less complicated organization. It has, however, to depend for the real core of its training program on the members of its active staff, who have no faculty appointments and who are in private practice. The program will succeed or fail depending on whether or not these physicians give it their wholehearted support. In order for a physician in private practice whose first duty is—and must be—to his patients to give the time and effort required to support a good training program, he must have a real desire to improve the work in his hospital and to help it turn out good interns and residents in his specialty. He may also realize that by carrying on a teaching program an improvement in the caliber of his own work will result, for, as we all know, the one who really benefits most from medical teaching is the teacher himself.

It is the active staff of a hospital, then, on whose efforts the success of a training program will rest, and the problem is to get the members of the staff to put into this program the best efforts of which they are capable. If that can be successfully accomplished, the rest is relatively easy. In the community hospital the training is likely to be more oriented to clinical application and less to a career in academic and investigative medicine than in the university hospital. We must, however, realize that, despite the need for turning out teachers and investigators, the chief goal of medical education is, after all, to produce capable clinicians. There is a tendency in academic circles to feel that if a doctor is an able investigator and has made valuable contributions to medicine he is doubtless sufficiently well trained and intelligent to be able to do creditable clinical work. Unfortunately, such is not at all the case, as can be authenticated by a fairly large number of assistant or associate professors of medicine who have failed to pass their board examinations.

If, then, we agree that good residency training, especially that oriented to clinical work, can be carried on in good community hospitals and that the program can only be accomplished by the efforts of the active staff, let us consider how this can best be done. To begin with, there must exist in the hospital, as a background, the various facilities and personnel that have been spelled out in "Essentials of Approved Residencies and Fellowships," published by the Council on Medical Education and Hospitals. Without repeating the details, we may note that these include a well-organized and well-equipped hospital with sufficient "case material" (if one can bring oneself so to characterize sick human beings). Good depart-

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Read before the Conference on Graduate Medical Education, Annual Congress on Medical Education and Licensure, Chicago, Feb. 11, 1956.

ments of pathology and radiology and a properly equipped medical library must be provided. In short, all the things that we recognize as leading not only to accreditation by the Joint Commission but also to the formation of an adequate background for a real educational experience for the resident are needed. But let me modify these bald statements by adding certain additional requirements that I believe are fundamental. These include an understanding governing board, a sympathetic and able administrator, a pathologist and a radiologist who, as key members of the educational team, can be counted on to do their parts with energy and enthusiasm, and, of course, an active staff, the majority of whose members appreciate the value of the training project and are willing to put personal effort into its fulfillment. All of the things mentioned are necessary for the establishment not only of resident training but also of a successful internship program, which, I believe, should be in good running order before residency training is undertaken.

Size of Hospital

It is difficult to say just how large a hospital should be to furnish to a resident sufficiently varied experience in medicine, surgery, or other specialties. Probably a general hospital should have over 300 beds to support a three-year program in medicine or surgery. Smaller hospitals may be able to combine to accomplish the same end. I shall not attempt to deal with the system of affiliation, by which a small hospital can receive residents rotated from a larger institution, except to say that such an arrangement is often the best solution for the small hospital and, if well conducted, can add very appreciably to the total training experience of the residents. Such a program is, of course, the responsibility of the parent hospital, and it will make no difference to the smaller hospital whether the parent institution is a university hospital.

It may be well to mention at this point the fact that a small hospital may occasionally be able to establish a very satisfactory residency in a single specialty (or even more than one) if it has certain individuals of outstanding ability to carry it on. I can think of one such hospital in which the one resident in anesthesiology gets the benefit of undivided attention and individual teaching from several highly qualified members of the department. Such a residency is the concern of the chief of the department and need not receive further consideration. Another type of residency that smaller community hospitals can well support is a residency in general practice. This is really similar to a second year of rotating internship, but it can be made especially valuable if it includes a period of preceptorship training with one or more practitioners in the community. It allows the resident to go considerably further in his knowledge of the various specialties and their techniques, so that he is equipped to go into general practice with confidence in his ability in various fields and also a clear realization of his limitations.

Larger Hospitals

Let us then turn to a discussion of the organization of residency training in the larger community hospital, well-equipped and well-staffed, with interns on duty. The basic requirements are already present; however, the addition of residents working in medicine, surgery, and other fields complicates the picture. Correlation, organization, and constant supervision are needed in order that programs in the various fields may run smoothly and efficiently. Any lagging or failure on the part of any service must, as far as possible, be corrected.

The over-all responsibility may well be vested in some one individual. He may be a staff member whose high ideals and great energy enable him to carry on the work while only partly neglecting his practice (I know at least one such person). He may be a pathologist or he may be a clinician on a part-time appointment. He should be by nature friendly, experienced, and tactful and preferably a good teacher himself. He must have the confidence and respect of the staff. He should be of the staff and also of the administration, with the emphasis on the former connection, and he should be clothed with considerable authority that he never really has to use. It is interesting to realize that a large number of hospitals throughout the country have recently appointed individuals to fulfill this function. It is perhaps well to mention at this point that, although the efforts of the director of education may appear to be principally concerned with intern and resident training, his long-range objective includes not only the teaching of these young physicians but also the influencing of the members of the staff to teach them, thereby teaching themselves. In this way he will attain his most important goal—achievement of better and better patient care in his hospital.

A number of the larger community hospitals have appointed a full-time director of medical education whose duty, as I have described it, is to organize and supervise intern and resident training and to take the lead in planning the educational program of the whole hospital staff. For this position a senior man, possibly a retired chief of a service, has an advantage over a younger individual in that he finds it easier to get full cooperation from the staff. The training of residents is, of course, one of his major interests. He not only must supervise the arrangement of meetings and conferences, but he must see that in its daily work every service is giving its residents the full and complete experience to which they are entitled. This may mean dealing as best he can with an occasional staff member who tends to "coast" and neglect his full duty to residents. Such an approach is normally made through the chief of the service. At times, however, it may be necessary to tactfully approach the chief himself in order to influence him to do a better job. It may also mean a careful check of the performance of attending physicians in an outpatient clinic, where, unfortunately, there is often a tendency on their part to rush away on their private rounds and leave bewildered residents to cope unsupervised with difficult and unfamiliar situations.

The director of education may often find opportunity to teach both residents and interns in his own specialty, which is a good idea if he can find time and is a good teacher; but he must beware of the tendency of the attending physicians in his specialty to leave the work to him and, in the common phrase, to "let George do it." But if he can show them, by example, how to teach effectively and can inspire them to do likewise, he will be doing a good job.

In the matter of arranging for outside speakers, "chiefs pro tempore," and the like, the director is usually the key person. He can make suggestions to the various departments and should formulate schedules so that conflicts are avoided. He may also be able to supplement the advice of the department chiefs in the matter of clinical investigations or case reports by residents, and in aiding both interns and residents in their preparation of records and in case presentation at conferences. He can stimulate the formation of a journal club and give advice to individuals as to planning their careers and preparing for board certification.

This work, which so definitely impinges on the clinical services, obviously must be carried on with tact and with the clear understanding that at no time do the activities of the director of education in any way interfere with the authority of the chiefs of service. A wise director, in taking up his work, will make it clear that he does not in any way take responsibility for the care of patients and will never—except in emergency—write orders or direct interns or residents as to how individual patients should be treated. In his teaching rounds, if he holds them, all suggestions as to treatment must be given merely as suggestions, and he must insist that the house staff look to their attending physicians for specific instructions. He can, if he sticks to his educational function, achieve the best of friendly cooperation and aid from the active clinical staff.

Smaller Hospitals

It is those hospitals with below 300-bed capacity that cannot individually support full residency training that present a special problem. In this connection, it is of interest to realize that it is in the smaller hospitals, which care for over half the population of the country, that there is the greatest need for the improvement of patient care. In this field the Joint Commission for the Accreditation of Hospitals is doing excellent work. Approximately 40% of patients in the United States are treated in hospitals whose bed capacity is 200 or less. As regards community hospitals of 200 beds and over, I have been able to compile figures for New England that are probably fairly typical of other parts of the country. In New England there are 5,619 beds in university-affiliated hospitals and 13,076 beds in nonaffiliated hospitals of 200-bed capacity or larger. If we break down this last figure, we find that there are 6,808 beds in nonaffiliated hospitals of 300-bed capacity or larger and 6,268 beds in nonaffiliated hospitals of between 200-bed and 300-bed capacity.

It can be seen that almost half the hospital beds in the nonaffiliated group are in hospitals whose capacity lies between 200 and 300. It may be that some of those listed have university affiliations of a more or less tenuous sort; for example, they may receive a few undergraduate clinical clerks and thus be listed as "minor teaching hospitals." This does not, however, materially affect their problem in relation to residency training. Hospitals in this group (below 300-bed capacity) that cannot arrange university affiliation can maintain very acceptable residencies by combining with other hospitals of similar capacity. In this way, two or more hospitals can present to residents as varied and valuable experience, if properly planned and supervised, as can a single larger institution. The program should be under the direction of a single individual who holds a part-time position in each of the cooperating hospitals. This does not mean that the supervision of residents will be any less the responsibility of the chiefs of service and attending physicians in each hospital but that there will be an individual whose duty it is to correlate the training in the cooperating institutions and produce a program that will add up to a well-rounded experience for the residents as they pass from one hospital to another.

Thus far, I have made no mention of the inclusion of training in the so-called basic sciences in the residency program of the community hospital. Although this is, of course, less easy to achieve than it is in the university-affiliated hospital, the need can be met. Besides the inclusion of a definite period on the laboratory service when the resident will receive adequate teaching and work assignments in such fields as pathological anatomy, surgical pathology, clinical pathology, and hematology, some community hospitals have been able to arrange with medical schools for special training courses for their residents in pathological physiology and biochemistry. Others have been able to arrange to have teachers from the medical schools come to them. It is only fair, however, to mention in this connection that it is not an uncommon experience for members of the American Board of Internal Medicine to meet at the oral examinations young physicians, fresh from their residencies in excellent university hospitals, whose fundamental knowledge is obviously of a very high order but whose skill in approaching and examining patients is woefully lacking. It may be easy to say that such skill can readily be acquired, but I can think of one of the best-trained internists whom I have known, now retired because of age, who in my judgment never, in all his years of practice, was able to learn how to deal with patients. Overemphasis on the science and neglect of the art does not make a good clinician.

No set plan as to the organization and administration of residency training can be written. It must be suited to the individual hospital or hospitals and will vary considerably with the varying ability and talents of the staff and the individuals in charge of the programs. It can show such variations without harm, so long as the fundamental objectives are achieved. Excellent examples can be found in many of our best community hospitals. Some time ago I was asked to deliver an address on the general subject of what makes a good hospital. After detailing and explaining the major requirements listed by the Joint Commission, I came back to the fundamental statement that is the answer to the question of what makes a good hospital and what makes a good residency program in nonaffiliated as in affiliated hospitals: there is just one thing—good people.

Summary

Residency training in hospitals that are not affiliated with medical schools differs from that in affiliated hospitals, principally in that the teaching of the residents is carried on by physicians who are in private practice and do not have university appointments. They are ordinarily

less oriented to academic medicine than are those on the staff of a university-affiliated hospital, and the primary duty that they owe to their private patients makes it more difficult for them to carry out teaching assignments. Nevertheless, they are able to do a creditable job, particularly in clinical teaching. Supervision by a single individual as full-time or part-time director of education is usually advisable. As a rule, a full training program for residents requires a hospital of at least 300 beds, but small hospitals can combine to offer a satisfactory program, preferably under the supervision of a single director of education. Training in the basic medical sciences can be accomplished by periods of service in the laboratories and in some instances by arrangements with medical schools. A creditable residency program can be carried on in a well-conducted community hospital if, and only if, it has the full support and participation of the active staff.

107 Bowen St. (6).

INTEGRATION OF BASIC SCIENCE WITH CLINICAL TRAINING

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• *Constant efforts must be made to integrate the basic medical sciences with clinical teaching. They should begin in medical school but should continue, under the leadership of the clinical teachers, during internship and residency years.*

Two procedures that aid this integration are here described: the teaching round and the therapeutic pathology conference.

The teaching rounds are held twice a week and attended only by residents, interns, and the clinician. They are devoted to the exploration of the basic biological and clinical aspects of the conditions of selected patients.

The therapeutic pathology conferences are held weekly and attended by the residents, the pathologists, and representatives of the departments of medicine and radiology. They are devoted to a scrutiny of the results of diagnostic and therapeutic efforts in the light of the findings of the pathologist and the radiologist.

If there is a free interchange of ideas, opinions, and facts, these sessions bring out the basic science aspects of medicine and help to produce well-motivated, well-rounded physicians.

Medicine as a profession exists to prevent disease, to cure the sick where possible, to ease their suffering, and to bring peace, understanding, and happiness to their minds. In all our thinking about medical education we must keep clearly before us the fact that all the efforts of medicine, basic and otherwise, are directed toward these goals. The term "basic science" as used in medicine has come to have a rather circumscribed meaning. Anatomy, biochemistry, physiology, pathology, bacteriology, and pharmacology have been long regarded as the basic sciences because they deal with the elucidation, and to some extent the application, of fundamental facts. Within the meaning of such a definition, medicine is as much an art as a science. Yet skill in the arts is science by a different interpretation of the word and so, therefore, are the all-important basic skills of history-taking, physical examination, and the understanding of human nature. I would like to consider the integration of basic science with clinical teaching from this point of view.

Integration of basic science with clinical teaching should begin in medical school. The residency period is a late time to begin, if a basic approach to clinical problems is to be fully ripened. When clinical medicine is well infiltrated with basic science in medical school, and, if this approach is nurtured in the residency years, basic thinking becomes natural—it becomes a way of life. In this connection I would like to emphasize my belief that much of the teaching in basic science of the clinical years should and must be done by clinical teachers. These teachers must, perforce, measure up to the task.

There is no better place than the patient's bedside to study and apply the basic knowledge, concepts, and skills of medicine. Here (as an example) anatomy, physiology, and biochemistry come alive, and the lessons learned about them stick because they are real. Here, too, the unanswerable problems pique the imagination, stimulate the desire to know more, and lead to future investigations. We should take care then, to exploit this opportunity to the fullest.

History-taking and the physical examination are seldom considered when we think about the teaching of basic science. We tend to regard them as arts or skills that are acquired naturally in the course of training. To a degree they will be, but if they are to be raised to the level of a science we need to give close and personal attention to the way they are taught. The ability to develop a perceptive history comes only after long experience and training, while the understanding of human emotions, such an indispensable part of that ability, takes even longer for most to acquire. Excellence in physical examination also requires practice and wide experience and a thorough knowledge of anatomy, pathology, and many other of the basic sciences. Skill in history-taking and physical examination cannot be learned adequately from books. Nor can it be self-taught any better than the technique of gastric resection. It is necessary that the guiding hand of the experienced teacher be constantly near during the growing period of the resident, because it is he who must see that these arts are perfected. He has the responsibility also of assuring that these arts are applied with basic understanding, because if they are not they will be reduced to little more than a ritual. In the end, it will be on the framework of a worthwhile clinical examination that the building stones of the basic biological sciences will be fitted with meaning.

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Read before the Conference on Graduate Medical Education, Annual Congress on Medical Education and Licensure, Chicago, Feb. 11, 1956.

There is considerable variation in the way basic science is integrated into the clinical teaching of residents. I am sure that no one is certain what is the best way. Facilities, personnel, and patients differ so greatly from center to center that the adoption of any uniform program would be impossible, even if it were wise. With this in mind, I would like to first discuss the value of some of the more traditional plans as they appear to me and conclude with a description of some of our own thoughts and plans. We claim no originality and find much to criticize about what we ourselves do now.

Traditional Methods

I have observed that there is a need to pay more attention to anatomy. Anatomy to some is a dead, nonvital science, not very essential to anyone but surgeons. I do not believe this is true, and it seems fundamental that, if we are to think intelligently about human disease, we must first know how the organism is put together. The weakness of our present-day graduates in this subject is glaring, and this is a severe handicap to them. A physician with a deficient knowledge of anatomy is always less facile in physical examination and in the unraveling of the meaning of his own findings, especially in complicated or unusual problems.

Regular and specialty ward rounds provide abundant opportunities for basic study, especially if the physician leading the rounds is strongly oriented in that direction; however, such rounds are of necessity heavily oriented toward patient care and diagnosis, which cuts down the time available for the meticulous probing of the features of certain cases that is so essential in the teaching of basic principles. While basic and clinical "pearls" are to be found here in abundance, these exercises cannot be relied upon for all the basic teaching our residents need.

Clinical conferences, seminars, and grand rounds are of great value when open and detailed discussions of basic mechanisms occur in a clinical framework. Young men at the resident level thrive on discussions that set them thinking. Free and organized expression of opinion and a spontaneous interchange of views is always a superb teaching experience for them. Well-arranged and well-conducted conferences of this type not only are educational but they are one of the strongest stimulants to further study. I have never felt that symposiums had much to offer for resident teaching. They are too often little more than circus-like displays—entertaining and interesting for the time, but not "sticking to the ribs" very well.

The exercises mentioned are important in our teaching, but if we are to make basic science an ever-present part of the thinking of our young physicians we need something more. We need additional instruction that is personal and intimate, teaching that will permit and stimulate our young men and women to exercise their own brains. Gilbert Highet,[1] in the preface of his delightful book "The Art of Teaching," expressed so well what I am trying to say when he wrote:

> Teaching involves emotions, which cannot be systematically appraised and employed, and human values, which are quite outside the grasp of science. A "scientifically" brought-up child would be a pitiable monster. . . . A "scientific" friendship would be as cold as a chess problem. "Scientific" teaching, even of scientific subjects, will be inadequate as long as both teachers and pupils are human beings. Teaching is not like inducing a chemical reaction; it is much more like painting a picture or making a piece of music. . . . You must throw your heart into it, you must realize it cannot all be done by formulas, or you will spoil your work, and your pupils, and yourself.

Our Method

In an attempt to meet this need, which I believe is real, I have long conducted twice weekly an intimate, informal, "family" type of teaching rounds and a weekly therapeutic pathology conference. Only the residents, interns, and I attend the rounds. The residents, pathologists, representatives of the department of radiology, and some of the members of our department compose the group at the therapeutic pathology conference. The rounds are devoted solely to the exploration of the basic biological and clinical aspects of the conditions of selected patients. These run the gamut of medical problems and are selected, without consultation with me, by the house staff. They often represent simple or complicated problems that the staff would particularly like to discuss. Occasionally, at their request, we will devote a session to the elicitation, interpretation, and basic mechanisms of a variety of physical findings.

Everyone is on equal footing at these rounds. Every attempt is made to dispel any air of authoritarianism. I find this quite appropriate, because on many occasions I have proved to be no authority. Every detail of the patient's condition, clinical and otherwise, is explored, with the emphasis shifting, of course, in accordance with the nature of each case. For my part, I keep the discussion going by questions and by the construction of hypotheses that may be accepted, torn down, discarded, or revised. In the course of the discussion every pertinent shred of evidence is examined, be it from the bedside, the laboratory, or the x-ray studies. Slides, tissues, or the results of special studies are often brought in for inspection—and not rarely articles from the literature that bear upon the problem.

The discussion is free, and the interchange of ideas and opinions is lively. Disagreements are resolved by joint effort whenever possible. When we all find a void or an uncertainty in our knowledge of some point under consideration, that is a signal for the assignment to one of the house staff the task of study of the literature or consultation with some other person particularly skilled in that field. A report is made at a future meeting. The drive and emphasis throughout is always in the direction of the basic issues. We find these meetings stimulating. One of the great advantages is that there is time to consider, time to think and talk about perplexing things, and opportunity to verbalize thoughts and ideas. Sessions of this kind are rough on the teacher. He often emerges as no knight in shining armor. I lose my share of nickels on the little side bets, but I am always satisfied to do so because I know that such a loss represents some clear thinking on the part of the winner.

At our therapeutic pathology conference we scrutinize our diagnostic and therapeutic efforts in the setting of the roentgenographic and pathological findings in the case. These are soul-searching sessions where no one holds

back. We study what we have done and what we should have done, our victories, our defeats, and our errors. The motivation here is almost entirely a basic one, and I have found the environment of this conference one of the best in which to bring out the basic science aspects of medicine. Here, as an example, we have the advantage of being able to see some of the reasons why our management of a fluid and electrolyte problem was so unsuccessful. A fatty liver may touch off a discussion of its causes, its biochemical and physiological effects upon the organism, and the additional means, if any, we might have employed to reverse the process. This conference also has an important by-product. It stimulates the staff to give the most thoughtful and assiduous care to their patients. They do not like to come before this group and be found wanting. No harsh criticism is leveled at them when judgment goes astray; rather we try to reconstruct the problem so that it is better understood and will be recognized in the future. One seldom sees a misjudgment repeated.

Comment

I have probably offered little that is new in this discussion. I have not tried to regale you with a summary of the thoughts and practices of others. You know them well. What I have tried to do is to appraise the present through our eyes, with the full realization that ours is only one of the many ways to achieve the goal we all hope for—that those who go forth from our hospitals will be well-motivated and well-rounded physicians, fully equipped to comprehend and take advantage of the advances of medicine as they come.

3181 S. W. Sam Jackson Park Rd. (1).

1. Highet, G.: The Art of Teaching, New York, Alfred A. Knopf, Inc., 1950.

THE RESIDENCY PROGRAM IN A UNIVERSITY-AFFILIATED HOSPITAL

ORGANIZATION AND ADMINISTRATION

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Organization connotes systematization, regimentation, coordination, and structure or constitution, while administration connotes governing, leading, or controlling. A residency program cannot be a good one when organized and administered by a man or men who believe that organization signifies only systematization, regimentation, structure, or constitution and that administration signifies only governing or controlling. In other words, it is my belief that the bases for the organization and administration of a good residency program are only two: coordination and leadership.

What are the aims toward which the coordination and leading of a residency program in a university-affiliated hospital are directed? They are four: (1) to care for the ill; (2) to instruct undergraduate students of medicine; (3) to provide to the graduate student of medicine as broad an experience in the general fields of internal medicine and surgery as possible while at the same time affording sufficient experience within the individual's field of special interest so as to permit the trainee to practice medicine during and after completion of the residency in a manner best befitting the interests of society and himself; and (4) to permit the individual having interest in research to exercise this interest.

The coordination of a residency program must be based upon some plan, and in order to formulate a plan a definition of the basic medical educational and service unit is necessary. The integral parts of these medical units in a hospital affiliated with a medical school are medical students, interns, assistant residents, residents, and staff. The original concept of a residency program in a university-affiliated hospital provided for the training of super-clinicians without consideration for the instruction of medical students. It merely entailed the attachment of a graduate student to a professor as a personal assistant and errand boy until the teacher judged the student trained. Such a concept is not applicable today. The specialties have rightfully been established, and, just as one man can no longer master all the techniques of medicine or surgery, one man no longer is capable of adequately training others alone. This is especially true in surgery. Today, therefore, the medical unit must be constructed about staff men having varied special interests. In order to ensure a broad training the graduate student must be assigned to these special services. This requires that the hospital medical units be organized about specialists, namely, staff men and resident physicians.

• Graduate training can and should bring about the deepening of broad medical interests. The organization of hospital services should be such that there cannot be insistence upon the segregation of patients on the basis of particular disease or anatomic location of deformities. The graduate student's responsibilities must be expanded gradually even to include the solution of internal hospital problems.

The medical unit must be organized about staff men having varied special interests. Each basic group should consist of one or more staff men, a resident, an assistant resident, an intern, and from two to four medical students. The trainee should rotate through the specialty services.

A most pressing problem today is the threat to ward service. The need for graded personal responsibility, permitting the graduate student some independence in planning and carrying out both diagnosis and therapy, must be kept in mind. Both private and ward services are required.

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Read before the Conference on Graduate Medical Education, Annual Congress on Medical Education and Licensure, Chicago, Feb. 11, 1956.

The basic group in a university hospital should include medical students. If it does not, the teaching of the undergraduate student becomes a thing apart and the student never attains a functional status within the hospital. To those of us who believe that education can only come through doing, the exclusion of the medical student from the basic graduate group is a major educational error. The basic group as I define it consists of one or more staff men, a resident, an assistant resident, an intern, and from two to four medical students.

Basic Groups

The number of basic groups within a given hospital should be determined by the number of patients in the hospital. In general, the basic group's duties on an active surgical service are such that the maximal patient load cannot much exceed 60 patients a month, or the daily attendance upon more than 20 to 30 patients. The minimal patient load is about 20 patients per month or a daily attendance upon 7 to 10. Loads in excess of 60 patients per month lead to hurried and at times slipshod work, and those lighter than 20 promote indolence.

TABLE 1.—*Educational Service Units in the Surgical Service of a Hospital with a Daily Surgical Patient Census of 260 to 300*

Service		Educational Units, No. per Service	Patients per Unit per Day, No.
General surgery			
Ward	3	..	17-25
Private	3	..	18-30
Emergency and Outpatient Department	1	..	30-60
	—	7	
Orthopedic surgery		1	34-50
Thoracic surgery		1	20-30
Urology		1	28-40
Plastic and maxillofacial surgery		1	20-30
Neurosurgery		1	20-30
Total		12	227-335
		Mean per unit—23.4	

The provision of broad training, while affording the trainee with extensive supervised experience within the field of his special interest, requires that the trainee rotate through the specialty services. Of course, there are many professors of medicine and surgery who will disagree with this statement; however, those who agree with me that general medicine and general surgery as they are practiced today are just as bona fide medical specialties as are neurology or orthopedics will agree with my statement concerning rotation. The actual coordination of a residency program in a university-affiliated hospital based on the above premise may be seen in table 1, which shows the basic service and educational groups and their work loads in the surgical service of a university-affiliated hospital with a daily surgical patient census of 260 to 300. Clearly, in this hospital the load on the orthopedic service is too great. Next year it will be reduced by adding another assistant resident and intern, so as to permit division of the service into one private and one ward unit.

Table 2 provides a partial picture of the scheme whereby the provision of as broad a training as possible for both the resident staff in surgery and medical students is effected simultaneously. All specialty residents have held asistant residencies in general surgery for lengths of time required by their specialty, namely, three years for thoracic and plastic surgery, two for orthopedics, and one year for urology and neurosurgery. All assistant residents in general surgery serve for at least three months on all specialty services. The students and interns do likewise, the interns for six weeks and the medical students for from two to three weeks.

Few single university-affiliated hospitals are capable of providing completely balanced graduate training, especially in surgery. Consequently, an association of university-affiliated hospitals is often desirable. Table 3 indicates the staff constitution and educational services provided by the associated affiliated hospitals now assisting in the training of assistant residents and residents of hospital X as well as of undergraduate students of medicine. Hospital X in turn provides special educational facilities for those residents of the associated affiliated hospitals that need them. This is indicated in table 3 by the word "exchange."

For a number of years I, like many others, believed that special postgraduate instruction in the basic sciences was requisite to the carrying out of a superior postgraduate training program in surgery. I no longer believe this. Instead, it is my belief now that the inclusion in hospital staffs of clinicians who have specialized in some branch of the basic sciences is the only sure means of bringing the contributions of biochemistry, bacteriology, pharmacology, and pathology to bear upon the education of undergraduate and graduate students of medicine. In other words, I now believe that the teaching of the application of the basic sciences to surgery and medicine must be done at the bedside by staff men or residents who have had special interest and training in the basic sciences and who have developed proficiency in the application of this special knowledge to the care of the ill. In university-affiliated hospitals this is now done readily, for the staffs of these hospitals are replete with internists and surgeons having had some special training and interest in the basic sciences.

Goal of Training

Even if the basic organization of a residency program and the abilities of the hospital staff members are excellent and complementary in all respects, the education of the individual may not be as successful as hoped for. To use surgery as an example, the gradual change from intern to surgeon may take place in two ways. Too often the person starting out with an all-encompassing medical interest and knowledge, little clinical judgment, and practically no manual medical training is gradually turned into a person who, while possessing good judgment and manual dexterity, has no interests except manual therapeusis and far less knowledge than he had as a junior medical student. Such a surgeon leaves diagnosis and preoperative and postoperative care to the roentgenologist, anesthesiologist, and internist because the interest he had as a student in the total aspect of medicine has been destroyed by the graduate training he has received. Graduate training can, on the other hand, bring about

the deepening of broad medical interests; the acquisition of judgment, diagnostic acumen, and skill in preoperative and postoperative care; and the development of manual dexterity. In the first case, graduate training has made a simple artisan of a medical student and potential doctor, while in the other it has created a physician who is also skilled as a surgeon. Graduate training in surgery is not the only form of training capable of destroying a physician. Misdirected graduate training in internal medicine and even in psychiatry may turn out diagnosticians who are relatively incapable of treating the ill because they do not know what surgery can do and who (worse yet) may even be intolerantly hostile to operative or other therapy. What are the conditions that are most conducive to the preservation of the medical student's enthusiasm and

In other words, in order that good postgraduate training be provided within a university-affiliated hospital, it is necessary that diabetics requiring surgery be cared for on the surgical wards by the surgical house staff in consultation with the medical service as well as on the medical wards, that patients with bleeding gastrointestinal lesions be cared for on the medical as well as surgical wards with both services caring for them on appropriate consultative bases, and that those with cutaneous ulcers be cared for on the dermatological, surgical, and medical services. Such policy effects the growth of mutual understanding among all of the members of the house staff, as well as the senior staff, and thereby promotes the maintenance of interests in general medicine and of those attitudes and capacities required in a true physician.

TABLE 2.—*Organization of Surgical Training Program for Residents, Interns, and Medical Students*

		General Surgery, Ward	General Surgery, Private	Orthopedics	Plastic Surgery	Urology	Thoracic Surgery	Neurosurgery	General Surgery, Clinic and Emergency	Surgical Pathology	Anesthesiology
Staff men		1	3-5	5	4	5	2	3	..	2	5
Residents	General surgery	1	0	0	0	0	0	0	1	0	0
	Specialty	0	0	1	1	1	1	1	..	4	4
Assistant residents	General surgery	1	1	1	2	1	2	1	2	1	1
	Specialty	0	0	3	0	2	1	2	0	0-1	1
Interns		1	1	1	1	1	1	1	..	0	1
Medical students		2	2	4 Concomitant assignment		6 *	4	6 *	6 *	0	4
Total students, all units		6	6	4		6	4	6	30-36 †	..	4

* Senior medical students.
† 6 to 7 students a day for 5 days a week.

TABLE 3.—*System of Exchange Training of Residents and Medical Students from Hospital X in Associate University-Affiliated Hospitals*

Hospital	Services	Affiliated Residencies	Medical Students	Staff
A	All	Assistant residents general surgery Residents' specialties Exchange	Juniors: medicine, general surgery, and fractures	Medical school faculty
B	All	All divisions of surgery: Exchange	Elective only	Medical school faculty
C	Pulmonary	Assistant residents general surgery Residents thoracic surgery	None	Medical school and other
D	All	General surgery: Exchange	Elective only	Independent
E	Pediatric orthopedics	Senior assistant resident in orthopedics	None	Independent (chief of service holds faculty appointment)
F	Neoplastic diseases	Assistant resident in general surgery	Elective only	Independent (consultant staff partially drawn from medical school faculty)
G	Pediatric	All of surgery (general and specialties)	Juniors: general, orthopedic, and thoracic surgery and neurosurgery in conjunction with hospital X service	Joint with hospital X though independently appointed

breadth of interest while they permit the development of judgment and special diagnostic and therapeutic dexterity? Undoubtedly, hospital administrative policy has an important bearing on this point. The trainee's breadth of interest will more easily be destroyed in a hospital that requires that patients with diabetes, peptic ulcers, cardiac failure, and myocardial infarction be treated only on the medical services, all those with bleeding gastrointestinal lesions on the surgical services, all those with cutaneous ulcers on the dermatological services, and all those with carcinoma of the larynx on the otolaryngological. If the graduate educational program is to change the medical student into a physician with special interests rather than into a highly specialized medical technician, there can be no insistence upon the segregation of patients on the basis of disease or anatomic location of deformity.

Importance of Ward Service

Another requirement for the carrying out of a superior graduate training program in a university-affiliated hospital is the provision of the privilege of "doing" by the house staff. A surgeon cannot be trained unless he is provided with this opportunity. This he cannot do by merely holding retractors or watching. Neither can an internist be trained unless the graduate student be permitted independent action in planning and carrying out both the diagnostic steps and the therapy. The recognition of the need for the provision of graded personal resonsibility in the training of postgraduate students has been the main factor responsible for the insistence of medical schools upon the maintenance of ward services by the hospitals affiliated with them. Until the present,

the only limiting factor in the maintenance of the ward service in the university-affiliated hospital has been the ability of the hospital to meet the financial requirements for their maintenance. However, today the university hospital is faced with the threat of disappearance of the ward service by virtue of the rapid expansion of medical care and professional service insurance. In other words, the limiting factor in the maintenance of the hospital ward service may soon be the attitude of the medical profession toward the care of patients having both hospitalization and professional insurance on the wards of university-affiliated hospitals. Unless the medical profession can adapt its attitudes toward the changing social structure imposed by the expansion of insurance, graduate training in all branches of medicine will suffer because the trainee will be denied the privilege of learning by doing. Personally, I view the threat to the ward service as the most pressing problem facing us in the field of postgraduate medical education today.

The emphasis placed upon the importance of the ward service in graduate training does not gainsay the important part played by the private services in house staff training. But the time-honored customs in medicine regarding the relationship of the patient to his chosen physician do not permit, on the private services, the degree of delegation of responsibility to the ward officer requisite for his full development. However, house officer service with private practitioners is exceedingly valuable because it provides an opportunity for the graduate student to learn that many ills can be cared for effectively in many ways. In addition, it provides a greater trial of the individual's social adaptability than the ward services do.

Training in the handling of internal administrative problems should be considered as a part of graduate training. For the graduate student to gain this experience, he must work at it. This can be effected by delegating to the residents the responsibility for solving many of the problems arising within the medical student group and between the intern and resident staffs and the nurses and other hospital personnel. In other words, the resident should be the liaison officer between the hospital administrators, the chiefs of staff, and other hospital personnel.

Basic Teaching Exercises

There are four basic formal teaching exercises in graduate training: the clinical pathological conference and death review; the staff conference; the surgical pathological conference, which includes an analysis of mistakes in diagnosis and therapy; and the record review. The clinical pathological conference and death review is fairly standard throughout the United States. The staff conferences vary in quality, and in general a good deal can be done to improve them from the standpoint of resident participation. The value of the staff conference in graduate education is in my experience directly related to the amount of participation by the resident staff in the discussions of the clinical problems presented at the general staff meeting. The amount of resident participation can be readily increased by simply calling upon the house staff for specific sections of discussion before the senior staff is called upon. The surgical pathological conference and therapeutic critique need no comment. The record review is an exercise presided over by one or two staff men and attended by the entire resident house staff. All records of the patients discharged the preceding week are scrutinized for adequacy. Problems relating to the management of particular clinical as well as fundamental problems are discussed and possible solutions delineated. In general, the chief of staff should preside at these meetings so as to gain direct personal insight into the peculiarities of personality and character of the various members of the house staff and gain from them a direct insight into the problems existing within the hospital itself.

Summary

The aims of a residency program in a university-affiliated hospital are the care of the ill, the instruction of undergraduate students of medicine, the provision of the graduate students of medicine with as broad an experience in the general fields of internal medicine and surgery as possible, and the permitting of the individual having special interest to exercise it. In order to attain these aims, the organization of the hospital services should be such that there cannot be insistence upon the segregation of patients on the basis of particular disease or anatomic location of deformities. In addition, the individual graduate student must be permitted to receive gradually increasing responsibility in the care of patients, the teaching of medical students, the administration of the department, and the solution of internal hospital problems. To this end, private as well as ward services are required.

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Diagnosis of Pernicious Anemia.—The urinary excretion test can be applied to distinguish between . . . control patients and those with addisonian pernicious anemia. The differentiation . . . is based upon the percentage of radioactivity excreted in the urine following an orally administered dose of vitamin B_{12} Co^{60}. No overlap was noted in the results of the tests in the two groups, which allows for a clear-cut diagnosis in each individual patient. Several observers have demonstrated that patients with addisonian pernicious anemia excrete in their stool a greater per cent of orally administered radioactive cobalt-labeled B_{12} than do normal controls. Furthermore, this difference was corrected when the patients with pernicious anemia were given a potent source of intrinsic factor. These observations indirectly supported the contention of Castle that intrinsic factor is concerned with the absorption of the extrinsic factor, vitamin B_{12}, in the upper gastrointestinal tract. He feels that intrinsic factor acts directly on the intestinal mucosa as a catalyst to some enzymatic process in the epithelium of the upper small intestinal wall. The results of the urinary excretion test are probably a reflection of the quantity of endogenous intrinsic factor activity, i. e., in addisonian pernicious anemia the low urinary excretion of radioactivity indicates decreased absorption of vitamin B_{12} Co^{60} caused by absent or diminished intrinsic factor activity. In patients with megaloblastic anemia other than addisonian pernicious anemia, such as nutritional folic acid deficiency or nutritional vitamin B_{12} deficiency, where the mechanism is not pathogenetically related to a lack of intrinsic factor, the urinary excretion test is normal. In sprue the urinary excretion of vitamin B_{12} Co^{60} is low in spite of the adequate intrinsic factor, endogenous or exogenous, probably because of a more generalized intestinal absorption defect of another type.—S. F. Rabiner, M.D., and others, The Urinary Excretion Test in the Diagnosis of Addisonian Pernicious Anemia, *Annals of Internal Medicine*, March, 1956.

DEGREE PROGRAMS AND INVESTIGATION

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The discussions at this conference have as their theme graduate medical education. One division of these considerations pertains to the basic science content of a residency program. Drs. Comroe and Lewis have reviewed two facets of this matter. It remains to give thought to the manner in which degree programs and investigation may function in the assignment of the basic sciences to their proper place in a residency program.

It seems appropriate to avoid a tangential interlude devoted to consideration of just how basic the medical sciences are as compared with mathematics, physics, and chemistry. And it seems unnecessary to give more than passing reference to the fact that there is some division of opinion on just what is and what is not investigation or research. By now, all of us who are here are in reasonable agreement on terminology or are denied such peace by colleagues hopelessly committed to iconoclasm. Some effort must be made, nevertheless, to supply a few generalities, even if they prove to be no more than a common point of departure for individual judgments concerning the place degree programs should occupy in residency training.

I suspect that, where degree programs have been established in the clinical field, their proponents have shared the following objectives: They have hoped (1) to provide the graduate student opportunity to "attain superior knowledge of the sciences that underlie the practice of his specialty"; (2) to combine this knowledge with clinical experience in a way that will enable the graduate student to practice his specialty in a scientific manner; and (3) to vest in a university the authority and responsibility for setting standards of excellence that must be met by the student if he is to receive the university's stamp of approval, a graduate degree in one of the fields of medical science.[1]

The more than 40 years that have passed since the initiation of degree programs in the medical sciences correspond with the period of development of the American boards in the several specialties. In these boards have come to reside the authority and responsibility for setting standards of excellence to be met by the physician if he is to be endorsed as one qualified to practice his specialty. Whether this development would have pleased or distressed the founders of degree programs, or whether it pleases or distresses us, is not our concern at this point. Our appropriate interest is in the fact that, generally speaking, in American medicine the physician who wishes to be endorsed authoritatively as qualified to practice his specialty seeks board approval. He may seek also a graduate degree in his clinical field, but he pursues this latter goal in full knowledge that his attainment of it will not be recorded on everybody's score sheet. However significant his accomplishment may be held to be in academic and certain other perceptive circles, it may have little bearing in some quarters on his recognition as one who is qualified to practice medicine in his field of specialty.

• Between the category of the clinician, whose working hours are devoted entirely to the care of patients, and the category of the career investigator, whose concern centers not so much on human beings as on humanity, is the category of the clinician-investigator. He serves as a liaison between clinician and laboratory, avails himself of the methods from the fundamental sciences, and may profitably spend part of his residency time at laboratory research.

Those who shape programs of residency training need to consider carefully which of these categories is to be taken as the goal of graduate medical education. The ideal of the clinician-investigator challenges almost unbearably the total resources of the individual. A graduate student in a clinical field should observe some upper limit of time devoted to research, and time beyond six months spent in laboratory assignment should not be subtracted from a minimum of two and one-half years on clinical assignments.

Justification for Degree Programs

What, then, is the justification for continued existence of degree programs as a part of residency training? Certain rather subtle virtues inhere in the free participation of a graduate faculty in the examination of its own students. These virtues are foregone if the faculty delegates this responsibility to another body, however excellent may be its qualifications. The faculty needs to conduct examinations in order to appraise the effectiveness of its teaching program, a point of importance to a faculty whose members have clinical as well as academic commitments. The members of the faculty, furthermore, have sound basis for believing that the manner in which the candidate, under their watchful eyes, has discharged his duties, cared for his patients, and mingled harmoniously or otherwise with his colleagues for three or more years should bear heavily on the final decision regarding his qualifications for a graduate degree.

The continued existence of degree programs must rest, however, on some more obvious distinction between the degree and board certification. The heart of that distinction is to be found in those programs in which the presentation of a satisfactory thesis is demanded of the graduate student as partial fulfillment of the requirements for a graduate medical degree. If this view is acceptable, then investigation, as the heart of the thesis, is the demand that distinguishes the graduate medical degree from board certification. By these arguments, support is marshalled for the view that the title "Degree Programs and Investigation" contains an essential redundancy and that the focus of our thought should be a simpler title, namely, "The Role of Investigation in a Residency Program."

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Read before the Conference on Graduate Medical Education, Annual Congress on Medical Education and Licensure, Chicago, Feb. 11, 1956.

Achieving a simpler title has not resolved the conflicts concerning the part that investigative efforts should play in the development of a medical specialist. Those conflicts are not new. Forty-five years have elapsed since Osler [2] voiced his fear "lest the broad open spirit which has characterized the school should narrow, as teacher and student chased each other down the fascinating road of research, forgetful of those wider interests to which a great hospital must minister." In 1955 Lewis [3] said:

> There is no doubt of the value of research in the nurture of the critical mind; however, it is not the only way to develop such an attitude, and I think we are unrealistic if we fail to recognize that only a few have real aptitude and interest in investigation. Does it really seem profitable or logical for a young man, who does not have that interest and that aptitude, to spend a year where he functions intellectually not far above the level of a technician? . . . Two years is too little time to produce a polished internist—at least an internist in the proper sense of the word—and three years is barely enough.

To identify what is at least another facet if not another judgment of the problem, I shall quote Dr. Henry W. Woltman's [4] statement of the propositions offered 40 years ago by Dean Elias P. Lyon: ". . . that the leaders of medicine, as exemplified by the class of specialists, should be more than practitioners, they should be scientists; that leadership in the profession should rest on productive scholarship; and that each of these propositions involved a task appropriate to a university."

These quotations are rendered interesting not simply by the varieties of opinion they reflect but, particularly, by the manner in which they convey on the part of each author a conviction born no doubt of experiences charged with emotion and conflict. It is not in the usual course of events that physicians become so interested in matters of curriculum that they devote to consideration of such matters more than an obliging comment. The physician's novel reaction on the subject of the role of investigation in the training of a specialist stems from a realization that the issue is more basic than that raised by the question of whether a graduate student shall spend a few months on a certain course of study. The concern of physicians arises from their realization that a graduate student's experience of investigation may well affect his aims and attitudes throughout his professional career. Herein lies the importance of investigation as an educational experience: to the average graduate student of medicine, the months devoted to research are not an extension of similar experiences that composed his earlier training. Rather, he finds himself for the first time on a lonely frontier of science, with a chance to stake out at least a small claim in the total province of man's knowledge. Granting the large probability that the bit of wilderness set off by the young explorer as his initial domain will prove unsuited for human habitation, the experience of pioneering may shape, or warp if you will, his ambitions to a degree rendering him forever malcontent with conventional medical practice. Whether this malcontent is viewed as good or bad depends on one's concept of the kind, or kinds, of physicians that a program of graduate medical education ought to produce.

Consequently, I now shall attempt to delineate three categories of medical specialists and a kind of experience in investigation appropriate to those of each category. Although these remarks are conceived with the specialty of internal medicine centrally placed in my reflections, such validity as they possess may be extended readily to other specialties.

Types of Medical Specialists

Clinician.—The first category includes the clinician whose working hours are devoted entirely to the care of patients. The satisfactions of his professional life are found in the solution of difficult diagnostic problems and in the respect and affection of his patients, his colleagues, and his students. Whether he maintains a broad interest in clinical problems or whether he becomes absorbed in a subspecialty seems of no great moment, an issue subject to circumstances of locality and time. Both the breadth and the depth of this clinician's professional career are derived from his interest in and love of human beings. Those who belong to this category of physicians are buttresses; they hold up the lofty walls of the structure of the medical profession. On them rests the responsibility of delivering to patients the best of medical care.

It seems desirable, indeed imperative, that residency programs produce more of this kind of specialist than of any other. What should be the basic science content of a program designed to encourage the production of and to produce highly qualified clinicians of this category? I believe that the core of such a program is substantial training in pathological anatomy, including participation by the graduate student in an active autopsy service. Consigning to this purpose six months from a training period extending over three years is consistent with the pressing needs of the student for varied clinical experiences. Supplementation of this intensive training in pathological anatomy with a program of seminars in clinical physiology is obviously desirable. The decision as to whether the student carries out a minor investigative undertaking during his period in the laboratory field can be reached on an individual basis. Essential to production of an excellent thesis or publication, and that is, needless to say, the only kind worth producing at all, are an able and determined student and a qualified teacher with sufficient time to supply counsel and supervision. From experience under such instruction, the student will emerge disciplined, chastened, and cognizant of how much in investigative effort is needed to produce so little in results. He will be less, rather than more, likely thereafter to load with trivia an already surfeited body of medical printed matter.

Career Investigator.—From the foregoing consideration of the kind of specialist that residency programs should turn out in greatest numbers, attention may be turned to a category whose members represent an antithesis to the devoted clinician in respect to ambitions and sources of personal satisfactions. This category, which, in keeping with the popular trend, I may label that of career investigators, finds its way into this discussion only because a person who becomes an investigator may follow a path that leads through a residency program. Granting that the species has reasonable justification for its existence, the importance of an experience in research to the future of a person of this category is self-evident. Obvious also is the fact that the kind of experience in

research that leads to a lifetime of investigation will ordinarily differ from that which is best for the future clinician. Investigators, if properly endowed for their calling, have a taste for fundamentals and an insatiable appetite for discovery. Their concern, deep and sincere as it should be and often is, centers not on human beings but on humanity. Theirs is not a common type among physicians who seek residency training. If among the few who are found there are some who were not aware of their peculiar tastes and endowments, an introduction to investigation in the course of the residency program may serve rather promptly to bring them to self-realization.

Clinician-Investigator.—There remains for discussion a third and final category. Its members are the clinician-investigators whose interests and activities are a composite of those ascribed to the members of the two categories previously described. It would be ridiculous to attempt to draw an exact line of demarcation between this third category and the other two. The appropriate end will be achieved if recognition is given to the existence of physicians of ambivalent interest and ambition as regards investigation and the practice of medicine.

This ambivalence renders their lives more complicated than the lives of those included in the first and second categories, but it renders them as a group more interesting as subjects for discussion. They have placed themselves in the perilous position of striving to serve two masters. They face the probability that their efforts will be deemed amateurish by the professional investigators, and they live with the frustration that comes from the encroachments of a growing practice on the time that they might, given choice, devote to research. Yet it is the production of this kind of specialist, this clinician with a devotion both to his patients and to the pursuit of the scientific method, that will be fostered by a residency program in which the enrolled students are encouraged to consign appreciable time to an investigative effort.

Importance of the Clinician-Investigator

The question may be raised whether there exist substantial reasons for encouraging production of this type of specialist. Recognizing full well that no amount of argument is likely to alter a single opinion on a problem as fundamental as this, I would set down for consideration the following points:

First, the clinician-investigator is serving now—and will serve increasingly as practitioners of medicine come to depend ever more heavily on laboratory techniques—as a liaison between the clinician and the laboratory. He will bring from the laboratory comprehension of the limitations of certain methods and will be able to speak authoritatively and revealingly to other clinicians and to students on these matters. An example from the past is electrocardiography. A clinician might understand certain technical aspects of this method and carry on experiments on animals designed to test the electrocardiographic consequences of myocardial injury. Then he might correlate this knowledge with extensive clinical experience. Such a clinician would be prepared to interpret electrocardiograms sensibly, free from excesses born of an enthusiasm disproportionate to knowledge.

Dr. G. W. Pickering,[5] in an address before the American College of Physicians, identified the significance of the relationship of the physician and the laboratory in the following comment: "To rely on data, the nature of which one does not understand, is the first step in losing intellectual honesty. The doctor is peculiarly vulnerable to a loss of this kind, since so much of therapeutics is based on suggestion. And it naturally leaves him and his patients poorer."

The clinician will bring to the laboratory a perception of crucial clinical issues. He may give to investigators more conversant with fundamental knowledge a sense of orientation and direction. These considerations pertain particularly in those laboratories where the patient is subjected to involved investigations demanding a high degree of individualization of testing procedures and on-the-spot revisions of protocol, if an exact diagnosis properly buttressed by supporting data is to be achieved.

Second, that the character of medicine is changing rapidly is so evident that it is mentioned only to introduce the equally evident corollary that the clinician who aspires to contribute materially to knowledge of disease will find it increasingly desirable to avail himself of concepts or methods derived from the fundamental sciences of physiology or biochemistry. The day is passing when a major addition to clinical knowledge stems predominantly from simple observation of the patient's symptoms, however astute may be the observer. Contrast, for example, William Heberden's description of the anginal syndrome with Jerome Conn's [6] presidential address on primary aldosteronism, read before the Central Society for Clinical Research.

Third, I believe that many a clinician-investigator could justify his continuing efforts to carry forward some minor endeavor in investigation on the same basis that a colleague might support pursuit of amateur photography or bird-watching. Research, if these small studies can be called such, is this clinician's hobby, toward which he turns for relief from the pressing responsibilities of his practice. For him, the failure of an experiment is of no great moment; the welfare of his current patients or his own livelihood and reputation do not depend significantly on the outcome of his investigation. On such a basis research can, and sometimes does, become "the pure delight." [7]

If the existence of the clinician-investigator can be justified on the basis of these, or perhaps more discerning, reasons, then grounds exist for including in the residency program a period when the graduate student is reasonably free of clinical responsibilities and has available to him the facilities of a laboratory. Most important among these facilities, as was suggested earlier, is a faculty capable and desirous of supplying appropriate counsel and cognizant of the boundary between guidance and domination. The period devoted to research by the graduate student who aspires to a career as a clinician-investigator ranges from a minimum of nine months to a maximum of two years. To confine the student within the upper limit of this period has proved more difficult than to induce him to attain the lower limit. I do believe, however, that a graduate student in a clinical field should observe some such upper limit of time or else should conclude that he desires to change his major endeavor from

a clinical to a laboratory field. I would state emphatically also that time beyond six months spent in laboratory assignment should not be subtracted from a minimum period of two and one-half years on clinical assignments.

Conclusions

I would like to reaffirm my conviction that the discussion of investigation as a component of an ideal residency program renders appropriate a consideration of investigative activity as a desirable component of the daily existence of a medical specialist. But if it is desirable, the conscientious person must balance it, as in many other activities of life, against what is possible. For I would identify the career of the clinician-investigator as one that challenges almost unbearably the total resources of the individual. And with this challenge to achieve significantly in two areas comes the hazard of settling for mediocrity in both. The sense of frustration that attends realization of this mediocrity may be reflected in poorer, rather than in better, care of the patient and in that restlessness of spirit that besets those who wander between two worlds. Therefore, I would not leave the impression that I have unduly advocated the career of the clinician-investigator. I have the impression that some have unduly advocated it. Certainly, the specialist who has combined successfully a clinical career with productive efforts in research is the idol of this generation of graduate medical students. I am enough of a believer in the consequences of hero-worship to suggest that it behooves those who shape programs of residency training to reflect carefully on whether creation of a generation of clinician-investigators is the desired goal of graduate medical education. To adapt a phrase ascribed by Professor Dobie to Emerson, we need to be very careful what we want, for we shall surely get it.

102 Second Ave. S. W.

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CURRENT PROBLEMS IN RESIDENCY TRAINING

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• A thoughtful reevaluation of all aspects of residency training is called for, including the problems resulting from the pyramidal system of appointments. The growth of the residency system, particularly within the past 15 years, has had considerable impact in terms of medical care as well as of medical education.

The need to define objectives, to evaluate results, and to plan for the future is essential if residency training is to develop along sound educational principles.

In any assessment of modern medical education in the United States, the role of residency training has come to occupy a position of primary importance. In fact, the growth and development of the residency system in this country might well be considered one of American medicine's most significant contributions to medical education and progress. From its beginning, some 75 years ago at Johns Hopkins Hospital, to its present status, with approximately 1,200 hospitals and over 20,000 residents involved, residency training has reached a place of predominant importance not only in terms of medical education but also from the standpoint of patient care. It can be estimated, for example, that budgetary allocations in hospitals conducting residency training are running at upwards of 50 million dollars yearly. In terms of patient care, statistics are equally revealing: one doctor out of every seven engaged in treating the sick is a resident in training. From its early beginnings under Halstead and Osler, residency training has indeed reached man's estate.

Residency training has not reached adulthood, however, without evidencing signs and symptoms that indicate that the basic structure may be in need of the services of an astute diagnostician and perhaps those of a competent therapist. It is to these signs of weakness that this paper will address itself, in the hope that the other speakers will examine the patient critically and that you as consultants this afternoon will join in arriving at a sound conclusion as to the course of therapy, if any. I do not believe that, at present at least, the problem is of such a nature that drastic surgery is necessary. Perhaps a change in orientation and attitude is all that is necessary, and if so, our confreres in psychiatry should be called in to advise us. On the other hand, symptomatic treatment may be all that is indicated. I shall try to give you a reasonably complete history, having lived with the patient for the past several years. It will be the task of my colleagues on this morning's program to make a detailed examination of some of the more serious symptoms and, with the assistance of this distinguished group, to arrive at a working diagnosis and to outline at least a course of interim therapy, if not one leading to complete cure.

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Read before the Conference on Graduate Medical Education, Annual Congress on Medical Education and Licensure, Chicago, Feb. 11, 1956.

Basic Problems

Some of the more basic features of our present residency program that have had the attention of many of us for some time but about which no final conclusions

have been drawn include, first, the objectives of residency training; second, techniques and methodology in achieving the desired results; and, finally, the standards to be used in evaluating not only the end-product —the resident—but also the training itself. I believe we have reached the stage where we must consider these three fundamental points if we are not to continue to drift.

Objectives of Residency Training.—To repeat, in considering the future of residency training, the following points require clarification: What are we trying to accomplish? Is the major objective of residency training the passing of a certifying examination? If so, we should recognize this rather limited goal and plan our training programs accordingly. Or is it rather the development of a competent physician or surgeon who will practice what we know as "good" medicine? If so, are we overemphasizing the importance of certain areas of residency training, such as research and investigation and minimizing others, particularly those relating to the "human" side of medical practice? Or again, are we attempting to produce an end-product who will, after experience seasons him, be able to function in the role of a consultant in his specialty? If that be the case, then it is evident that our sights require readjusting and our educational standards need to be raised.

Accomplishing Our Objectives.—These questions lead us inevitably to a consideration of the second basic problem: having defined our objectives, how are they to be accomplished? In this connection some equally pertinent questions immediately present themselves. What precisely do we mean by the often-used phrase "basic science aspects of the specialty," and how are they best taught? What is the proper role of the non-university-affiliated hospital in training residents? Can a hospital staff engaged in private practice organize and conduct an acceptable residency program? If so, this premise should be recognized and the misconception should be dispelled that in the future only medical school–connected hospitals will be approved for training residents. Again, in surgery and the surgical specialties, how much emphasis should be placed on the concept of learning by doing; i. e., in stressing the importance of independent operating by the resident staff are we losing sight of other more fundamental considerations? What place has research in a residency program? What is the proper place, if any, of didactic instruction at the residency level?

The length of a residency program varies with the specialty, with the majority of residencies now of three years' duration. Is this amount of time adequate, too much, or too little? Where does the internship fit in with an otherwise thoroughly integrated residency program? What justification if any is there for so-called partial training programs; i. e., residencies of one or two years' duration? To what extent can or should medical schools assume responsibility for resident training in hospitals outside the immediate environs of the school; i. e., the so-called regionalization of residency programs? Simply raising these questions indicates the extent of the problem in considering the proper approach to residency training in terms of methods, techniques, and over-all planning.

Judging the Results.—The third and final basic consideration in reviewing the field of residency training is the question of judging the results of our efforts. Here one must take into account not only the evaluation of the resident on completion of his training but also the more difficult task of evaluating the program in which he trained. The subject of board examinations and their validity is outside the scope of this discussion. It is pertinent, however, to point out in passing that unless the boards can evaluate with reasonable accuracy the end-product of the residency system, we shall continue to grope in attempting to determine the effectiveness of residency programs as they are now conducted.

The evaluation of a residency program is a most difficult undertaking, as those of you know who sit on one of the many committees concerned with this function. Before the job can be done to the satisfaction of the medical staffs of hospitals throughout the United States in which residency training is being conducted, as well as to the satisfaction of the committees themselves, more specific guideposts must be established. If a hospital staff is to be advised that the residency program they have developed is unsatisfactory, then it is, I believe, incumbent on the committee responsible for evaluating such programs to delineate the components of a satisfactory program. To avoid the Charybdis of arbitrary and capricious action on the one hand and the Scylla of rigidity on the other presents a most difficult task and one on which our evaluating committees might well flounder were it not for the fact that they are composed of individuals of mature judgment and dedicated viewpoint. Let no one believe, however, that the evaluation of a residency program is a simple matter and one that invariably can be reduced to a common denominator or even several denominators. Only when the human equation as it relates to professional competence and teaching skill can be expressed in simple terms will it be possible to set up a precise formula for a satisfactory residency program.

Pyramidal System of Advancement

There are a number of other related problems that I should perhaps mention, if only briefly. Among them is that of the foreign graduate. To what extent are we responsible for providing educational opportunities to graduates of foreign medical schools? This subject in itself might well form the basis for an afternoon's discussion. Time will not permit my going into this subject at any length. I would, however, like to pose one specific question, particularly as it relates to foreign graduates, that I believe is deserving of serious study and that relates to the appointment system in effect in many hospitals throughout the country. Can we any longer justify a pyramidal system of residency appointments in view of the inevitable effects in terms of inequities and individual frustrations? I had long considered the question of pyramidal versus vertical appointments to be a somewhat academic one that could provide a stimulating

discussion, without any change in the position of the proponents for either side of the argument. I have recently had a communication referred to me, however, that from my standpoint, at least, puts the matter in a different light.

The letter I refer to was from a news agency of one of the larger countries in Asia outside the communist orbit. With it was enclosed a story to be published in many of the newspapers in that country that described our residency system. The story was, for the most part, factual and objective. In commenting on the pyramidal system in use in the United States, the report states as follows:

> Usually there is only one year contract between the employer hospital and the candidate for residency. The candidate even if he is willing to continue may be dropped off the next year and if this happens, the candidate may seek a position much inferior to the previous one. This is possible under a much condemned system called the "Pyramid System" of residency. This Pyramid System of residency is practiced by most of the good institutions in this country. Under this system, the hospital employs more number of residents in the first year who should normally go into the second year. But, as there are fewer positions in the second year, some of them are dropped out on the basis of competitive merit. Again, by the end of the second year some of these are dropped out so that by the final year of residency only one or two remain. The selection is presumably done purely on merit. But in practice, this does not happen and the chief, very regrettably, has to select the local man to the detriment of the foreigner. In a poll that was conducted by a Journal *Resident Physician,* this system was condemned by a large majority of both residents and the teachers alike. This system is very detrimental to the foreign resident especially in the field of surgery.
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> The chief of the service may not intimate the resident regarding his non-extension, till the end. Therefore, the candidate may not know that he has to seek his fortune in another hospital. As sudden termination of residency means a dislocation of the candidate's plans and a foreigner who may not be able to mobilize enough money for passage and as a passage may not be available by ship at short notice, the candidate may have to accept a humbler position and continue here.
>
> In one of the Departments of X hospital, an examination was held by the chief of service to the resident staff who were completing the first year of residency. About 15 candidates sat for the examination and the results revealed that first came a national of Ireland and the second was an Indian. The examination was intended to pick up the best for the second year positions. The postings were first made accordingly. However, a protest was made by American candidates and the plan was abandoned and both the first two candidates were given the least desirable positions. The Indian national was relegated to an inferior hospital with less pay and in a smaller position than what he held the previous year.

Whatever the merits of the pyramidal system in terms of stimulating competition and developing a limited number of more highly trained men, I do not believe it can be defended in terms of our present concepts of residency training, particularly in view of the exploitation that can be charged against us on the basis of cases such as the one cited above. To state that the number of such cases is probably limited is, I believe, to beg the question. If we are not prepared to follow through on our responsibilities to foreign graduates who come to us with high expectations, then in all fairness to them we should not consider them for appointment in any capacity. The pyramidal system has been accepted by graduates of our own schools, who recognize some of the more pernicious side-effects. A graduate of a foreign medical school may not, however, realize the implications when accepting an appointment to a hospital in which this system prevails, and he may learn to his regret that he will be denied the opportunity of completing his training in the place of his choice. The argument can certainly be made that no hospital should offer an appointment to a prospective applicant unless it is prepared to see him through his full training. The implication otherwise is obvious; at the lower levels of residency training more "hands" are needed, hence more appointments are necessary. This concept, I believe it is fair to state, subordinates education to the service needs of the hospital, a criticism that is often made of smaller hospitals with much less justification than in the case of the major teaching hospital referred to in this article.

I hope I have not overemphasized this particular problem. I mention it to point up the necessity for thoughtful reevaluation of all matters relating to residency training. We have reached the stage in the development of the residency system in this country where we must examine with meticulous care this phase of medical education that has grown so rapidly, particularly in the past 15 years, to determine what corrective action, if any, is needed to assure its further development along sound educational lines. We need have no fear for the future, however, as long as people like yourselves are willing to take time out from busy practices and teaching and administrative responsibilities to attend conferences of this nature and to bring to bear on the problems that confront us the concerted thinking of outstanding clinicians, distinguished educators, eminent research workers, and prominent administrators that this audience represents.

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Acute Pancreatitis.—Severe upper abdominal pain which resembles that of perforated ulcer or acute gallbladder disease may prove to be due to acute pancreatitis. This is one acute disease of the abdomen in which a laboratory test may be very helpful. A routine serum amylase determination is being used more and more in acute abdominal pains. Some favor the urine amylase, while others use the serum lipase test. A sharp elevation of the serum amylase or other tests is regarded as practically diagnostic of acute pancreatitis. However, a false positive may occur in other acute abdominal diseases such as perforated ulcer, ulcer penetrating into the pancreas, and high intestinal obstruction. A point which may cause some confusion with intestinal obstruction or peritonitis is the marked paralytic ileus which may develop and be manifest in the x-ray. Sometimes the distention is predominately in the large bowel, other times it may appear mainly in the small bowel, or it may be in both. The development of shock in acute pancreatitis is a serious omen and may indicate a fulminating pancreatic necrosis along with an enzymatic retroperitoneal phlegmon which may not be helped by any therapy. However, supportive treatment with serum albumin, plasma, blood, fluids, antibiotics, and Levin tube suction may salvage many patients. This type of shock is due to the withdrawal of the fluid component of the circulating blood volume into the necrotizing tissues and in some instances to hemorrhage from the stomach. Calcifications in the pancreas as seen in x-ray are usually the result of repeated attacks of pancreatitis. A stone in the pancreatic duct which may produce pancreatitis can occasionally be visualized in the x-ray. Following an attack of acute pancreatitis one may develop a large pseudocyst which may obstruct the duodenum by pressure or perforate into the free peritoneal cavity.—H. P. Jenkins, M.D., Diagnosis of the Acute Surgical Abdomen, *Surgical Clinics of North America,* February, 1956.

SALIENT POINTS IN THE CLINICAL DIAGNOSIS OF CONGENITAL HEART DISEASE

BASED ON A NINE-YEAR STUDY OF 1,395 PATIENTS

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• *Congenital malformations of the heart have been studied in 1,395 patients, and in 300 of these the diagnoses have been established at autopsy. In the vast majority, a clinical diagnosis can be made without angiocardiography and without cardiac catheterization. The largest group of malformations consisted of 287 cases of ventricular septal defects. A small number of bizarre cases remain undiagnosed, even with the help of additional physiological tests. All that is usually necessary in order to arrive at a clinical diagnosis is correlation of the anamnestic, physical, fluoroscopic, roentgenographic, and electrocardiographic findings. This fact is illustrated by detailed clinical consideration of the cyanotic and noncyanotic groups of cases.*

Until recent years, the diagnosis of the various types of congenital malformations of the heart was considered to be a very difficult and hazardous task. The brilliant work of Maude E. Abbott, followed by the remarkable clinical contributions of Helen B. Taussig, stimulated a worldwide interest in these studies. The extensive use of angiocardiography and cardiac catheterization, correlated with the experience gained in the operating room and at autopsy table, have resulted in a marked revision of the clinicians' interpretation of the meaning and value of various physical cardiac findings, of the significance of various changes in the size and shape of the heart, and of the vascular lung fields as seen on fluoroscopy and roentgenology and in a far better and more exact interpretation of atrial and ventricular hypertrophies in the standard and unipolar electrocardiograms and vectorcardiograms. Before the use of the new physiological methods, diagnostic conclusions by various clinicians were oftentimes at variance, and only autopsy findings could establish a definite diagnosis. The same condition, for example, was often thought to be an atrial septal defect by one, a ventricular septal defect by another, a pulmonary stenosis by a third, or an atypical patent ductus arteriosus by a fourth.

Nowadays there are a considerable number of clinicians who, with the knowledge accumulated from a correlative clinical and physiological study, can establish a clinical diagnosis in the vast majority of all types of congenital malformations of the heart without angiocardiography and/or cardiac catheterization. All that is usually necessary in order to arrive at a clinical diagnosis is to correlate the history, physical, fluoroscopic, roentgenologic, and electrocardiographic findings. Rarely one meets bizarre cases where even complete clinical and physiological studies do not permit one to arrive at a definite diagnosis. These experiences are becoming less and less common as the knowledge of the pathology and of the hemodynamics of these malformations keeps on improving.

During the past nine years, since the establishment of the cardiophysiology department at the Cook County Children's Hospital, we have studied 1,395 patients with congenital malformations of the heart. Most of these patients were studied at the Cook County Children's Hospital and the others at the Presbyterian Hospital, Research and Educational Hospitals of the University of Illinois, and Mount Sinai Hospital. Three hundred fifty patients were seen in office consultations. The total does not include a considerable number of referred patients who had insignificant, innocent murmurs or rheumatic heart disease. Over 90% of all patients were under 16 years of age.

It is unnecessary to point out that a complete history and physical examination, including a fluoroscopic and roentgenologic study, should be made on all patients. Since many of our patients were infants and young children, we found it necessary and most helpful, particularly in the office, to use mild sedation on some of the uncooperative patients. It is surprising how much more profitable such an examination can be. It is then possible to record the blood pressures in the arms and legs, to carry out auscultation and fluoroscopy, and to take a proper electrocardiogram. A barbiturate in dosage of 0.1 grain (6 mg.) per pound of body weight, not exceeding 2.5 grains (0.15 gm.), is dissolved in 3 to 5 cc. of water and given rectally. It is the purpose of this study to bring out as briefly as possible the most salient points in the clinical diagnosis of the more common types of congenital malformations of the heart—points that in our experience are the most valuable to establish the diagnosis. A number of helpful symptoms and physical, fluoroscopic, roentgenologic, and electrocardiographic signs are omitted for the sake of simplicity and brevity. Since this paper deals with the clinical diagnosis of congenital malformations of the heart, the angiocardiographic and cardiac catheterization findings are not discussed at all.

Incidence of Various Types of Congenital Heart Disease

The incidence of various types of congenital malformations of the heart encountered in this study is presented in the order of frequency (see table). In addition to the usual clinical examination, which included fluoroscopy, roentgen films in the posterior-anterior, right anterior oblique, and left anterior oblique views, and a 15-

From the Hektoen Institute for Medical Research, the Cardiovascular Department of the Cook County Children's Hospital, the pediatric and surgical departments of the University of Illinois College of Medicine, and the Presbyterian and Mount Sinai hospitals.

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lead electrocardiogram (standard leads 1, 2, and 3, AVR, AVF, AVL, V_1, V_2, V_3, V_4, V_5, V_6, V_7, V_{3R}, V_{4R}), the diagnosis of these entities was confirmed by 500 phonocardiograms taken on the Sanborn twin-beam phonocardiogram, 850 angiocardiograms, 450 cardiac catheterizations, and 300 autopsies. Many of the autopsies were performed on newborn and young infants.

Most of the cases marked undiagnosed in this series were of either atrial or ventricular septal defects. Very few of the patients for whom diagnoses were not made had complete clinical and physiological studies performed. Almost all of them were seen during the first five to six years of this study, when the diagnosis of these entities by clinical means alone could not be depended upon.

Incidence of Various Types of Congenital Malformations of the Heart

	No. of Patients	%
Ventricular septal defects	287	20.5
Tetralogy of Fallot	156	11.1
Patent ductus arteriosus	150	10.7
Atrial septal defects	135	9.6
Undiagnosed	112	8.1
Coarctation of the aorta (preductal and postductal)	78	5.5
Complete transposition of the great vessels	60	4.3
Pulmonary stenosis with atrial and/or ventricular septal defects	42	3.0
Isolated pulmonary stenosis	41	2.9
Common atrioventricular valves (all forms)	33	2.3
Aortic and subaortic stenosis	29	2.1
Eisenmenger complex	25	1.8
Tricuspid atresia	24	1.7
Persistent truncus arteriosus	24	1.7
Dextrocardia with and without situs inversus	24	1.7
Primary endocardial fibroelastosis	22	1.5
Idiopathic dilatation of pulmonary artery	18	1.2
Mitral atresia	13	0.9
Single ventricle	12	0.86
Tricuspid stenosis	12	0.86
Vascular rings	12	0.86
Mitral stenosis with and without fibroelastosis	10	0.7
Pentalogy (tetralogy of Fallot with atrial communication)	8	0.57
Ebstein's anomaly	7	0.5
Levocardia	7	0.5
Taussig-Bing heart	7	0.5
Tumor of the heart	7	0.5
Anomalous drainage of all pulmonary veins	6	0.43
Anomalous left coronary artery	6	0.43
Primary pulmonary hypertension	6	0.43
Transposition of great vessels with pulmonary or aortic stenosis	4	0.28
Aortic septal defect	3	0.21
Ruptured sinus of Valsalva	3	0.21
Arteriovenous pulmonary aneurysm	3	0.21
Glycogen storage disease	2	0.14
Double left atrium	1	0.07
Double right atrium	1	0.07
Lutembacher syndrome	1	0.07
Total absence of myocardium from right ventricle	1	0.07
Congenital diverticulum of left ventricle	1	0.07
Anomalous entrance of anterior descending branch of left coronary artery into infundibulum of right ventricle	1	0.07
Ectopia cordis	1	0.07
Total	1,395	

Noncyanotic Group

Coarctation of the Aorta.—The easiest and best way to diagnose coarctation of the aorta is to palpate the femoral arteries in all routine examinations. The femoral pulsations are diminished or absent. Blood pressure is higher in the arms than in the legs, the reverse of the normal findings. The blood pressure in the upper extremities may be high, 200 mm. Hg or even higher. If the blood pressure in the arms is only slightly elevated, but is still definitely lower in the legs, there is either associated subaortic or aortic stenosis or the coarctation of the aorta is not of a severe degree. If the blood pressure in the left arm is significantly lower than in the right arm (more than 15 to 20 mm. Hg), there is either associated stenosis of the left subclavian artery or the coarctation is proximal to the left subclavian artery. In these cases the notching is usually absent from the left ribs. The blood pressure readings in the arms are reversed if there is stenosis of the right subclavian artery or if there is an anomalous right subclavian artery originating from a left aortic arch distal to the coarctation.

The murmurs of coarctation of the aorta are not characteristic, but a systolic murmur is usually present, particularly between scapulas. In older patients collateral vessels, particularly along the scapulas, can be palpated or visualized. Roentgen films of the heart either are normal in the milder cases or reveal left ventricular and, rarely, also left atrial hypertrophy in the severer cases. The ascending aorta may be dilated.

Notching of the lower ribs, usually between the third and eighth, is seen in older children and adults and is characteristic. Widening of the left lateral superior mediastinal border in the posterior-anterior view, due to the dilated left subclavian artery in association with notching of the ribs, is pathognomonic. Electrocardiograms are not characteristic. If there is no notching of the ribs in a patient past adolescence or if there is notching of only the lower ribs, retrograde aortography and, perhaps, cardiac catheterization are indicated because of the possibility of an abnormal site of the coarctation and the presence of a patent ductus arteriosus at or distal to the coarctation. (See section on preductal [infantile] coarctation.)

Patent Ductus Arteriosus.—The pathognomonic sign of patent ductus arteriosus is the presence of a continuous "machinery-like" murmur with maximum intensity over the second and/or first left interspaces. This murmur does not disappear when pressure is applied over the jugular vein or the neck is turned to the same side as it will when the murmur is due to a venous hum. The systolic portion of the murmur is accentuated at the end of systole and may be transmitted over most of the precordium. If there is a definite enlargement of the left ventricle, a middiastolic rumble may be present inside the apex and is then a sign of relative mitral stenosis. Pulse pressure may or may not be high in direct proportion to the size of the shunt.

In a comparatively small number of cases, only a systolic murmur may be present—such as in very young infants, in patients with marked cardiac enlargement and high pressures in the pulmonary artery, and in patients with a reversal of the shunt. In such cases the diagnosis can be definitely established only by retrograde aortography and/or cardiac catheterization.

The fluoroscopic, roentgenologic, and electrocardiographic findings are not characteristic. The heart may be within normal limits if the ductus is narrow and the shunt is small, or there may be a bulge over the pulmonary area, increased pulmonary vascular pulsations and markings, enlargement of the left ventricle and left atrium, and a dilated ascending aorta if the ductus is wide and the shunt is large. However, definite right ventricular hypertrophy in the electrocardiogram excludes an uncomplicated patent ductus arteriosus.

If the patient is cyanotic, especially if the cyanosis is more marked in the legs and in the left arm than in the right one, there is a reversal of the shunt from the pulmonary artery into the aorta or a bidirectional shunt. The

electrocardiogram usually reveals predominant right ventricular hypertrophy. These patients may also have a coarctation of the aorta at or proximal to the patent ductus and will then have a higher pressure in the arms than in the legs, and the electrocardiogram will show combined hypertrophy. The murmur of an aortic septal defect cannot be differentiated from the usual murmur of a patent ductus arteriosus, except that the murmur is heard best somewhat lower, i. e., in the third or even fourth left interspace. For the definite diagnosis of an aortic septal defect, retrograde aortography and/or cardiac catheterization are necessary.

Vascular Ring Compressing Trachea and Esophagus.—Dysphagia, more noticeable during a meal of solid foods; wheezing; and repeated respiratory infections are usually present and may be very marked in the case of vascular ring compressing the trachea and esophagus. There are no characteristic findings on physical, conventional roentgen films, and electrocardiographic examinations. The diagnosis can be established by means of roentgen films with barium esophagrams in the posterior-anterior, right anterior oblique, and left anterior oblique views. They reveal a compression of the trachea and an anterior displacement of the esophagus in the region of the aortic arch.

Atrial Septal Defects.—A systolic murmur of only moderate intensity, maximum over the second and third left interspaces, with a reduplicated second pulmonic sound is present when there is an atrial septal defect. Electrocardiograms almost always reveal an incomplete right bundle-branch block. The presence of a middiastolic rumble is common if the heart is definitely enlarged and, in the overwhelming majority of cases, does not mean the presence of associated mitral stenosis (Lutembacher syndrome) but denotes a relative stenosis due to ventricular dilatation. Fluoroscopy and roentgen films may be within normal limits if the septal defect and the left-to-right shunt are small, or there may be definite cardiac enlargement, a bulge over the pulmonary area, increased pulmonary vascular markings, and pulsations if the defect and the shunt are large. There is no enlargement of the left atrium and no dilatation of the ascending aorta.

In patients with ostium primum and a split mitral valve and/or ventricular septal defect, this murmur is heard lower down, and there is usually a loud blowing systolic murmur over the apex. Dyspnea is common, and the heart is almost always enlarged. The electrocardiogram in these patients usually shows left axis deviation in the standard leads and right ventricular hypertrophy in the precordial leads.

The presence of cyanosis is very rare, and this signifies a reversal of the usual shunt from the left to the right atrium or a bidirectional shunt or the existence of associated lesions. In the presence of very large shunts, there may be mild peripheral arterial oxygen unsaturation due to pulmonary congestion. The presence on the electrocardiogram of marked right ventricular hypertrophy of the barrage (systolic overfilling) type is not seen in uncomplicated atrial septal defects unless there is anomalous entrance of all pulmonary veins or other lesions are present.

Ventricular Septal Defects.—Criteria for diagnosis of ventricular septal defects may be divided into those for small defects, those for large defects, and those for defects with reversal of, or with, bidirectional shunt.

Small Defects: The diameter of the small defect is considerably smaller than one-half the diameter of the aorta, and the shunt from the left-to-right ventricle is small. No symptoms are present, and there are no cardiac findings except those found on palpation and auscultation. There is a harsh loud systolic murmur maximum over the third and fourth left interspaces. A systolic thrill may or may not be present. Often, the murmur is soft, "puffy," and short. The second pulmonic sound is normal.

Large Defects: There is often a history of pulmonary infections when there is a large defect, especially during the first two years of life. A hyperdynamic apical impulse, a thrust over the pulmonary area and, often, also over the lower parasternal region, and a precordial bulge signifying left-and-right ventricular hypertrophies are usually present. A systolic thrill and loud systolic murmur is maximum over the third and fourth left interspaces and heard better over the fifth left interspace than over the second. The second pulmonic sound is loud and strong.

Fluoroscopy and roentgen films reveal a bulge over the pulmonary area, marked increase in pulsations and size of pulmonary vascular markings, and usually an enlarged left atrium. Electrocardiogram reveals predominantly left ventricular hypertrophy, if the left-to-right shunt is large and if there is no marked increase in pulmonary vascular resistance. If the latter is present, the shunt is smaller and the electrocardiogram shows combined hypertrophy.

Large Defects with Reversal of, or with, Bidirectional Shunt: When there is a large defect with reversal of, or with, bidirectional shunt, cyanosis may be evident. There is no hyperdynamic apical impulse, but the thrust over the lower parasternal and pulmonary areas is usually present. Systolic murmur over the third and fourth left interspaces is usually not as loud. The second pulmonic sound is very strong and loud. Electrocardiogram reveals predominant right ventricular hypertrophy.

Isolated Pulmonary Stenosis.—The patient with isolated pulmonary stenosis is not cyanotic except terminally with failure. There is a harsh, diamond-shaped systolic murmur and usually a systolic thrill maximum over the pulmonary area. The intensity of the murmur is often proportional to the degree of the stenosis. The second pulmonic sound is diminished and, in severe cases, may be absent.

Fluoroscopy and roentgen films usually reveal a convexity over the pulmonary area, but the peripheral pulmonary vascular markings and pulsations are diminished. The size of the heart on roentgen films may be within normal limits even in the presence of definite right ventricular hypertension, or there may be an enlargement of the right ventricle and of the right atrium. The electrocardiogram reveals right ventricular hypertrophy. If the stenosis is very severe, cyanosis and marked cardiac enlargement are present early in life because of a right-to-left shunt through the foramen ovale. (See section on pulmonary stenosis with atrial communication and normal aortic root.)

Idiopathic Dilatation of the Pulmonary Artery.—In idiopathic dilatation of the pulmonary artery, there is a systolic murmur of varying intensity over the pulmonary area. The second pulmonic sound is normal. Fluoroscopy and roentgen films reveal a convexity over the pulmonary area and normal peripheral pulmonary vascular pulsations and markings. The electrocardiogram is normal.

Aortic and Subaortic Stenosis.—In aortic and subaortic stenosis, there is a harsh systolic diamond-shaped murmur, maximum over the aortic area with an intensity usually proportional to the degree of stenosis. Systolic thrill is usually present over the same area or felt best over the suprasternal notch. The systolic murmur is usually widely transmitted, especially over the neck vessels and, at times, is heard best over the fourth or fifth left interspaces. However, this murmur is poorly transmitted posteriorly over the lung bases. Low systolic and narrow pulse pressures may or may not be present, but the arterial pulse curve over the carotid or brachial arteries often shows a characteristic pattern with a slow rise, a prolonged plateau, and a slow descent. The presence or absence of the second aortic sound does not differentiate an aortic from a subaortic stenosis.

Roentgen films and electrocardiograms may be within normal limits in the milder form of stenosis. In the severer cases fatiguability and anginal pains may be present, and the roentgen films and electrocardiograms reveal left ventricular hypertrophy and strain. In older patients calcification of the valves may be visualized on roentgen film examinations. Sudden death may occur.

Ruptured Congenital Aneurysm of Sinuses of Valsalva.—A history of sudden onset of chest pain, usually associated with dyspnea, and, at times, evidence of failure of the right side of the heart and the sudden appearance of a rather superficial, very loud continuous systolic and diastolic murmur heard best over the right precordium and transmitted over the rest of the precordium with a high pulse pressure are practically diagnostic of ruptured congenital aneurysm of sinuses of Valsalva. Angiocardiography and/or catheterization are very helpful in establishing the diagnosis.

Cardiac Enlargements.—It is difficult to establish the differential diagnosis of noncyanotic forms of cardiac enlargements in infancy due to: (1) anomalous origin of the left coronary artery from the pulmonary artery, (2) primary endocardial fibroelastosis, (3) glycogen storage disease of the heart, (4) myocarditis of unknown etiology (probably viral), and (5) marked coarctation of the aorta, either preductal (infantile) or postductal (adult) types.

Except for coarctation of the aorta, the differential diagnosis may be very difficult or impossible. The pathognomonic sign of coarctation of the aorta is the presence of higher pressure in the upper than in the lower extremities. The differential diagnosis between preductal (infantile) coarctation and postductal (adult) coarctation is very difficult. Cyanosis of the lower extremities favors the diagnosis of the preductal (infantile) type, but this is seldom evident in early infancy.

Retrograde aortography, with the demonstration of the presence or absence of collateral circulation, the location and extent of the coarctation, and the presence of a patent ductus arteriosus, is the best and most definite way to differentiate these two types of coarctation in early infancy. In the preductal type, the ductus arteriosus is patent and there are usually no evidences of marked collateral circulation. The following points are of help in the differentiation of the other types. 1. The presence of a loud, harsh systolic murmur over the precordium speaks against the diagnosis of anomalous left coronary artery, glycogen storage disease, or myocarditis. 2. A history of a previous or concomitant infection and/or progressive improvement in the clinical condition of the patient with a gradual improvement in the electrocardiogram speak for the diagnosis of myocarditis. 3. If the glycogen content of a skeletal muscle is very high (5%-10% or over), the diagnosis of glycogen storage disease is practically certain.

The electrocardiogram in any of these entities is not characteristic. However, if the electrocardiogram reveals persistent abnormal Q waves with upward displacement of the S-T segments and T waves over the left ventricle, thus signifying the probable presence of a ventricular aneurysm, the diagnosis of an anomalous left coronary artery is highly probable. If the angiocardiogram reveals one coronary artery originating from the pulmonary artery, the diagnosis can be established.

Cyanotic Group

Tetralogy of Fallot.—In tetralogy of Fallot, cyanosis is not evident during the first few months of life, unless very severe pulmonary stenosis or atresia is present. In mild cases, cyanosis may not be evident even in later childhood, except after exertion. Squatting is common, and, in severe cases, anoxic attacks characterized by sudden onset of marked dyspnea and unconsciousness occur. There is usually a systolic thrill and a systolic murmur of varying degrees over the second, third, and, often, the fourth left interspaces. In cases of pulmonary atresia, the murmur may be absent. The second sound over the pulmonary area is present, and often loud, and is due to the closure of the valves of the dextroposed aorta.

Fluoroscopy and roentgen films reveal a heart that is usually not enlarged, with the apex elevated, presence of a concavity in the pulmonary area, and diminished peripheral pulmonary vascular pulsations and markings. However, in many cases roentgen films reveal the heart either to be within normal limits or even to have a slight convexity over the pulmonary area, due to poststenotic dilatation of the pulmonary artery. In the presence of a severe anemia, the roentgen films may reveal a large dilated heart, and the pulmonary markings may be increased due to pulmonary congestion. This finding, fortunately, is very rare. The electrocardiogram reveals right ventricular hypertrophy of the adaptation type.

Pulmonary Stenosis with Atrial Communication and a Normal Aortic Root.—Patients with mild and moderate cases of pulmonary stenosis with atrial communication and a normal aortic root present about the same findings as those of isolated pulmonary stenosis and are not cyanotic, if the shunt is from the left into the right atrium. (See section on isolated pulmonary stenosis.) In severe cases there is cyanosis, dyspnea, and progressive and marked cardiac enlargement even in infancy. If the car-

diac enlargement is marked, the convexity of the pulmonary area is masked by the marked clockwise rotation of the hypertrophied right ventricle and its bulging outflow tract. The electrocardiogram reveals right ventricular hypertrophy, and, in severe cases, it is very marked and of the barrage (systolic overfilling) type.

Tricuspid Atresia.—The most important finding in tricuspid atresia is the electrocardiographic evidence of the presence of left ventricular hypertrophy in a cyanotic patient. Murmurs are not characteristic, and it may be very difficult or impossible to determine left ventricular hypertrophy from the roentgen film findings. The peripheral pulmonary vascular markings and pulsations are diminished. However, if complete transposition of the great vessels is also present and there is no pulmonary stenosis, the pulmonary vascular markings and pulsations are increased.

Complete Transposition of the Great Vessels.—Murmurs are not characteristic, and may even be absent, when there is complete transposition of the great vessels. Roentgen films reveal an "egg-shaped" heart—the base of the heart is usually narrow and may widen in the left anterior oblique view. The pulmonary vascular markings, which usually appear diminished on fluoroscopy, are increased on roentgen films and appear "fluffy." There is usually progressive cardiac enlargement. The electrocardiogram reveals right ventricular hypertrophy and, in the presence of an interventricular septal defect, a combined hypertrophy. The angiocardiogram, especially in the left anterior oblique view, is usually characteristic.

In Taussig-Bing heart, where the aorta is completely transposed and the pulmonary artery overrides both ventricles, fluoroscopy and roentgen films reveal a bulge over the pulmonary area and marked increase in the peripheral pulmonary vascular pulsations and markings.

Persistent Truncus Arteriosus with One or Two Large Pulmonary Arteries.—Cyanosis is minimal and may not be evident clinically in persistent truncus arteriosus with one or two large pulmonary arteries. Systolic thrill and systolic murmurs of varying degrees are heard over the third and fourth left interspaces. Continuous systolic and diastolic murmur over the right or left side of the chest is often present. Fluoroscopy and roentgen films reveal increased pulmonary vascular pulsations and markings over one or both lung fields and a concavity over the pulmonary area. The electrocardiogram usually reveals right ventricular hypertrophy, but left or combined hypertrophy may occasionally be seen.

Eisenmenger Complex.—A history of late onset of cyanosis is present in Eisenmenger complex. Systolic thrill and systolic murmur of varying degrees over the third and fourth left interspaces and a loud second pulmonic sound are present. Fluoroscopy and roentgen films reveal a bulge over the pulmonary area and increased pulmonary vascular markings. The electrocardiogram shows right ventricular hypertrophy of the adaptation type.

Anomalous Entrance of All Pulmonary Veins.—When there is anomalous entrance of all pulmonary veins, cyanosis is usually not evident clinically unless the patient is in a terminal condition. Murmurs may or may not be present and are not characteristic. If the pulmonary veins enter the superior vena cava or its tributaries, the roentgen films usually present a characteristic double shadow, the figure-of-eight, in the upper mediastinum. If they enter the right atrium, angiocardiography and/or cardiac catheterization are necessary to establish the diagnosis. The electrocardiogram is helpful if it reveals marked right ventricular hypertrophy of the barrage (systolic overfilling) type.

Dextrocardia with Situs Inversus Abdominalis.—Usually no symptoms referable to the heart are present in the case of dextrocardia with situs inversus abdominalis. In rare cases there are associated cardiac lesions, and cyanosis may then be present. Bronchiectasis is, perhaps, more common in later adulthood than normally. The easiest way to diagnose this entity is to first palpate and locate the liver on the left and the stomach on the right side of the abdomen and then locate the cardiac apex on the right side. Roentgen films confirm the above findings. Electrocardiogram reveals the mirror image position of lead 1, and lead 2 replacing lead 3. However, the P waves are usually more characteristic. The P wave is down in lead 1 and AVL, and usually up in AVR. The P wave is up in AVF.

Isolated Dextrocardia.—In the case of isolated dextrocardia, the liver and stomach are in normal position. The heart and the cardiac apex are on the right side. Cyanosis is usually present. The findings are those of the associated lesions. If the venous atrium and the sinoauricular node are on the right side, the electrocardiogram will not reveal the characteristic P waves.

Levocardia.—In the case of levocardia, the abdominal organs are in position of situs inversus, but the heart occupies the left side of the chest. Cyanosis is present and is most often due to pulmonary stenosis. Other cardiac malformations are usually present. The characteristic P waves of dextrocardia may be present if the venous atrium is on the left side instead of on the right side of the heart.

Comment.—Before closing the discussion of the cyanotic type of congenital malformations of the heart, we believe it is important to point out the following additional information regarding patients with these malformations. If a cyanotic patient with a congenital malformation of the heart presents roentgenologic and fluoroscopic evidences of a heart that is not definitely enlarged and of pulmonary vascular markings that are definitely diminished, this patient most probably has a congenital malformation of the heart that is amenable to surgical intervention by means of a Blalock-Taussig, Potts-Smith, or Brock pulmonary valvulotomy. These patients have either tetralogy of Fallot—pseudotruncus (that is, tetralogy of Fallot with infundibular atresia), tricuspid atresia, single ventricle with a pulmonary stenosis, pulmonary stenosis with a normal aortic root, or dextrocardia or levocardia with pulmonary stenosis. The one most important exception to this rule is the presence of isolated, severe pulmonary stenosis with a normal aortic root. These patients present a progressive and marked cardiac enlargement that often manifests itself early in infancy.

However, even though the heart is markedly enlarged, the pulmonary vascular pulsations and markings are definitely diminished.

On the other hand, if the cyanotic patient presents roentgenologic and fluoroscopic findings of a definitely enlarged heart and, even more important, if the pulmonary vascular pulsations and markings are definitely increased, surgical intervention with the above-mentioned operations is almost never possible. These patients may have complete transposition of the great vessels, Taussig-Bing heart, Eisenmenger complex, persistent common trunk with large pulmonary arteries, single ventricle with large pulmonary arteries, or a number of other malformations with increased pulmonary blood flow.

Malformations such as cor triloculare biatrium, cor triloculare biventricularis, cor biloculare, mitral atresia with and without atresia or hypoplasia of the aorta, persistent truncus arteriosus with small or absent pulmonary arteries, Ebstein's anomaly (displacement of the tricuspid valve downward into the right ventricle), and arteriovenous aneurysm of the coronary vessels can not be diagnosed on clinical grounds alone, and in some instances even with additional physiological tests, and they are, therefore, not discussed in this study.

Summary

One thousand three hundred ninety-five patients with congenital malformations of the heart were studied over a period of nine years. In addition to physical, fluoroscopic, roentgenologic, and electrocardiographic examination, the diagnoses were confirmed by 850 angiocardiograms, 450 cardiac catheterizations, and 300 autopsies.

The order of frequency of the 13 noncyanotic types in our series was ventricular septal defect, patent ductus arteriosus, atrial septal defect, coarctation of the aorta, isolated pulmonary stenosis, aortic and subaortic stenosis, primary endocardial fibroelastosis, idiopathic dilatation of the pulmonary artery, vascular rings, anomalous left coronary artery, aortic septal defect, ruptured sinus of Valsalva, and glycogen storage disease. The order of frequency of the nine cyanotic types was as follows: tetralogy of Fallot, complete transposition of the great vessels, pulmonary stenosis with atrial and ventricular septal defects, Eisenmenger complex, tricuspid atresia, persistent truncus arteriosus, levocardia, Taussig-Bing heart, and anomalous drainage of all pulmonary veins.

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TREATMENT OF ACUTE ALCOHOLISM WITH PROMAZINE (SPARINE)

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• *Acute alcoholic intoxication in 141 instances was treated with promazine in doses ranging from 25 to 100 mg. orally every four to six hours. In the presence of vomiting the initial dose was given intramuscularly with little pain or local reaction. Nausea and vomiting were promptly checked in 89% of the patients, and symptoms of gastritis were dramatically relieved. All patients with gastric complications were able to retain fluids and nourishment within a few hours after treatment began.*

Withdrawal symptoms were satisfactorily controlled in all patients who remained for the complete course of treatment, which usually required three to five days. Although 70% of the patients were also suffering from various complications, including Laennec's cirrhosis, no serious complications ascribable to the drug developed throughout the entire series. Dizziness and postural hypotension were the only side-effects encountered, and the hypotensive effect and compensatory tachycardia were less noticeable than in patients treated with chlorpromazine.

The clinical effectiveness of certain phenothiazine derivatives in the management of acute and chronic alcoholic states has been previously reported.[1] The present study concerns treatment of 141 hospitalized chronic alcoholic patients with 10-(3-dimethylaminopropyl)-phenothiazine hydrochloride, now designated as promazine (Sparine). All were acutely intoxicated at the time of admission. Forty-three patients (30%) were suffering from acute inebriation without medical complications. These were individuals who had been drinking compulsively for several days to several months or years prior to admission. They presented no symptoms other than those characteristic of an alcoholic debauch. Ninety-eight patients (70%) presented one or more complications, some of which frequently result from excessive consumption of alcohol. The various complications in these 98 patients were as follows: Laennec's cirrhosis, 51 patients, or 36% (three clinical subgroups, presented in the table, were established for this category); acute alcoholic gastritis, 36, or 25% (in this group most of the patients had ingested little or no food for several days before hospitalization; their primary complaint was vomiting and extreme epigastric tenderness; hematemesis occurred after admission in 3 of these patients); barbiturate habituation, 11; coronary heart disease, 11; psychoneurosis, 23; delirium tremens, 5; upper respiratory infections, 5; hypochromic microcytic (nutritional) anemia, 3; arteriosclerosis, 3; severe avitaminosis and malnutrition, 2; obesity, 2; acute cystitis, one; diabetes mellitus, one; and tuberculosis, one. Evidences of anxiety, depression, feelings of guilt, self-reproach, and remorse were seen to some degree in most of the patients. Anxiety reactions were most common. Two patients experienced severe reactive depressions, and one presented a typical Korsakoff's psychosis.

From the Kalorama Institute.

The promazine used in this study was supplied as Sparine by Wyeth Laboratories, Inc., Philadelphia.

Plan of Treatment

Alcohol was withheld from all patients, and each received vitamins parenterally and orally during the hospital stay. When fluids could be retained, intravenous in-

fusions were not administered. Patients with alcoholic gastritis were maintained on a bland diet and therapy with antacids and tincture of belladonna. Initially, promazine was administered to each patient in doses determined on the basis of body weight. Patients weighing less than 150 lb. (68 kg.) were given 50 mg. every four hours; to those weighing more than 150 lb., 75 to 100 mg. was given at the same intervals. It soon became apparent, however, that body weight alone was not an adequate criterion, and thereafter the dose was individualized on the basis of clinical response; it ranged from 25 to 100 mg. orally (except in the presence of vomiting) every four to six hours. Butabarbital sodium in doses of 30 to 60 mg. was at times used in combination with the promazine. At bedtime, a barbiturate or chloral hydrate was also administered to insure sleep.

Results

Treatment with promazine satisfactorily relieved the withdrawal symptoms of acute alcoholic intoxication in all patients who remained in the hospital for the complete course of therapy. In almost every case treatment was completed in three to five days. Three per cent of the patients left the hospital against medical advice on or before the second hospital day. No deaths occurred in this series of patients. Nausea and vomiting were promptly checked in 89%, and, with few exceptions, it was possible to administer food and fluids orally immediately after initiation of drug therapy. Psychomotor agitation and tremors were usually well controlled, although some patients reported that they still felt tense and inwardly nervous at the time of discharge. In the patients without medical complications the symptoms of intoxication were more rapidly controlled than in those suffering from intercurrent disease, possibly because in the uncomplicated cases the alcoholism was less severe.

Symptoms of gastritis were promptly and dramatically relieved by the administration of promazine. All patients with gastric complications were able to retain fluids and nourishment within a few hours after drug administration. Only two patients required intravenous administration of fluids; this was continued for only 24 hours. Severe anxiety and depression, present in 23 patients, were partially relieved as a result of the medication. The patients, nevertheless, appeared to be detached from their emotional symptoms and seemed to be less perturbed by their discomfort. In no case, however, was there improvement in the basic underlying neurosis. The same response had been observed previously with chlorpromazine in similar dosage.

No serious complications such as jaundice, agranulocytosis, dermatitis, or signs of sensitization developed as a result of medication. Jaundice occurred during treatment in one patient with evidence of severe Laennec's cirrhosis at the time of admission, but this was considered unrelated to the therapy because of the presence of serious liver disease. Dizziness on assuming the upright position occurred in 8% and syncope in 1.5%, either of these usually in older patients with cerebral arteriosclerosis. It seems advisable that promazine be used cautiously in older patients, especially in the presence of cerebral vascular disease. Alcohol, a central nervous system depressant, tends of itself to produce instability of the vasomotor system.[2] Hence, the untreated alcoholic who is abruptly made to assume an upright position after having been recumbent frequently experiences an immediate and significant fall in pressure, in some cases with syncope. Several patients reported a "drugged" feeling, but further questioning elicited the opinion that the sensation was not unpleasant and certainly was more comfortable than the withdrawal symptoms of alcoholism.

In general, the results of this study were better than those obtained in a similar group treated with chlorpromazine. Little hypotensive effect was seen, and there were fewer cases of compensatory tachycardia than in treatment with chlorpromazine. Unlike chlorpromazine, little pain or local tissue reaction was observed after the intramuscular injection of promazine. It is of interest that one of the nurses who had become sensitized to chlorpromazine, with development of dermatitis venenata, was able to prepare and handle promazine without difficulty.

Laennec's Cirrhosis Complicating Acute Alcoholism in Fifty-One Patients (36%)

Degree of Cirrhosis	No. of Patients	Sulfobromophthalein Retention at 45 Min., %	Cephalin Flocculation at 48 Hr.
Severe	12	15 or more	++++
Moderate	19	8-14	+++
Mild	20	5-7	++

Summary

Promazine (Sparine), a new derivative of phenothiazine, was used for treatment of 141 patients hospitalized for acute alcoholic intoxication. In addition to alcoholism, 70% were also suffering from various complications, including Laennec's cirrhosis. Withdrawal symptoms were satisfactorily controlled in all who remained in the hospital for the complete course of treatment, which usually required three to five days. Nausea and vomiting were promptly checked in most patients, and, with few exceptions, fluids and oral feedings could be administered immediately after initiation of drug therapy. No serious complications developed throughout the entire series. Dizziness and postural hypotension were the only side-effects encountered. Results were more satisfactory than in a similar group treated with chlorpromazine; minimal hypotensive effect was seen, and there were fewer cases of compensatory tachycardia than after chlorpromazine therapy. Promazine could be given intramuscularly with little pain or local tissue reaction.

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MANAGEMENT OF ACUTELY DISTURBED PATIENTS WITH PROMAZINE (SPARINE)

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and
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• Promazine was administered either orally or parenterally to 407 acutely disturbed patients. The series consisted of 103 psychotic patients, 42 addicts experiencing withdrawal symptoms, and 262 alcoholics. The last group included 110 patients with full-blown delirium tremens, 55 with acute inebriation, and 97 with acute tremulousness and/or hallucinosis.

The initial dose of promazine, ranging from 50 to 400 mg., was effective in inducing sleep in these disturbed subjects. A maintenance dose every four to six hours in most instances kept these patients in a quiescent, detached state, from which they could be easily aroused to care for their personal needs. In the agitated psychotic patients the induction of sleep was frequently associated with a dramatic return toward normal of both blood pressure and heart rate.

Orthostatic hypotensive phenomena observed most frequently in the alcoholic group were not serious. Neither acute vascular collapse nor pain from intramuscular injection has been noted. Promazine appeared to potentiate the action of barbiturates and to have an antiemetic effect. During the relatively short period of treatment in these acutely disturbed patients, none of the complications reported after the use of other phenothiazine derivatives were noted.

The effectiveness of subcortical depressants for the management of acutely disturbed patients is well established. Their principal action is to induce a quiescent and emotionally detached state from which the patient may be readily aroused to care for his personal needs. This is in contrast to the disabling somnolence resulting from the administration of aliphatic depressants and the bromides in the concentrations required to produce an equivalent degree of sedation. Of the tranquilizing agents heretofore available, chlorpromazine, because of its immediate onset of action, has been the drug of choice for the management of acutely disturbed patients. In view of the various complications [1] that may result from chlorpromazine administration, it was considered worthwhile to determine the clinical effectiveness of promazine (Sparine), a new phenothiazine derivative [10-(3-dimethylaminopropyl) phenothiazine hydrochloride], in the management of acutely disturbed patients. Laboratory studies have shown that promazine possesses pharmacological properties closely resembling those of chlorpromazine and that its acute and chronic toxic effects are of the same order or less than those of chlorpromazine.[2] Preliminary observations have indicated the potential value of promazine in the management of acutely disturbed patients.[3]

Method of Administration for Conditions Studied

The subjects selected for clinical evaluation of promazine were 407 acutely disturbed patients admitted to the psychiatric division of our hospital. Of this group, 262 were suffering from conditions induced by alcohol, such as acute inebriation, delirium tremens, acute hallucinosis, or acute tremulousness; 103 were agitated or confused psychotic patients, of whom 95 exhibited increased psychomotor activity and 8 were depressed. Also included in the study were 41 opiate addicts and one barbiturate addict, all experiencing abstinence symptoms.

The initial dose of promazine ranged between 50 and 200 mg. The drug was administered orally whenever possible but was injected intramuscularly or intravenously when rapid action was desired or when patients were vomiting or were uncooperative. Subsequent doses and routes of administration were determined by the degree of psychomotor activity present and the response obtained from use of each previous dose. In most of the patients, blood pressure and pulse rate were recorded before and at various intervals after the administration of promazine. The effect of the drug on postural blood pressure changes was also recorded. The patients were carefully observed for evidence of the various complications reported to have occurred in association with the administration of other phenothiazine derivatives.

Acute Inebriation.—Fifty-five patients admitted because of acute inebriation, usually culminating in acute tremulousness, received promazine either parenterally or orally to control their central excitatory states. The mean initial dose, given parenterally or orally, required to induce sleep was 100 mg. The frequency of subsequent administration (usually every four to six hours) depended on the response to each previous dose. The maintenance dose varied from 50 to 75 mg., and therapy with the medicament was continued for an average of four days.

Acute Tremulousness and Hallucinosis.—Fifty-five patients with acute tremulousness and 42 patients with acute tremulousness and hallucinosis (usually visual) were successfully managed by an initial dose of 100 to 150 mg. of promazine followed by maintenance doses of 100 to 125 mg. The patients received the drug every four to six hours as long as they continued to complain of the "shakes," hallucinations, or insomnia. The average duration of treatment was five days. These patients fell asleep or dozed intermittently within 30 to 45 min-

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The promazine used in this study was supplied as Sparine by Wyeth Laboratories, Philadelphia.

Mr. William K. Young, Mrs. Marie D. Negron, and Miss Julia V. V. Johnson assisted in this study.

utes after each dose of promazine given intramuscularly or orally and could be aroused easily to take fluids or nourishment.

Delirium Tremens.—There were 110 patients with full-blown delirium tremens. In view of the need for immediate sedation of these patients, an initial dose of 200 mg. of promazine was administered intravenously in the majority of cases. The response obtained was variable; some of the patients fell asleep within 5 to 10 minutes and slept for four to six hours. On their awakening, the increased psychomotor activity characteristic of this disorder had cleared completely in about 15% of these subjects. The only residual symptom in this group was increased nervous tension. The mean maintenance dose of 100 to 150 mg. given orally was continued at four-hour to six-hour intervals until there was no further recurrence of the manifestations of their disturbances. A number of the subjects awakened within one to two hours after the initial injection, exhibiting no apparent reduction of excitation. In such instances they were given either an intramuscular or intravenous injection of 100 to 200 mg. of promazine. In the more resistant cases, it was necessary to continue parenteral therapy at frequent intervals for several days, in some instances for as long as a week, before there was complete abatement of the increased psychomotor activity. Single doses as high as 300 to 400 mg. were occasionally administered intravenously without untoward incident and usually with good response.

A patient who demonstrated no appreciable response to the initial intravenous injection of promazine received, in addition, 100 to 200 mg. of pentobarbital intravenously. The majority of these subjects fell asleep immediately and were subsequently maintained by promazine given intravenously, intramuscularly, or orally, with supplementary pentobarbital when necessary, the frequency and amounts being determined by the severity of manifestations on awakening. The average duration of treatment for patients with delirium tremens was seven days.

Our experience with promazine indicates that in doses of 50 to 200 mg. the drug induces sleep readily in most subjects exhibiting manifestations of alcohol-withdrawal syndromes. In many of the patients on awakening, the overt manifestations of these syndromes, if still present, can be controlled usually by doses smaller than the initial dose. The manifestations of autonomic hyperactivity in postalcoholic states, such as tachycardia, hypertension, and diaphoresis, do not appear to be directly influenced by promazine; they slowly disappear, however, as the underlying condition spontaneously improves. In 3 of 110 cases of delirium tremens in this series there was a recurrence of the syndrome while the patients were receiving maintenance therapy. The incidence of "rum fits" does not seem to be appreciably influenced by promazine; 11 of the alcoholic subjects had seizures while receiving the drug. The failure of subcortical depressants to abolish these seizures indicates perhaps that they may be of cortical origin. There were two fatalities, both in patients having delirium tremens. One succumbed to an unrecognized subdural hematoma; the cause of death in the second could not be determined. (The reported mortality rate [4] for patients with delirium tremens is from 5 to 15%.) Although the use of promazine has often permitted earlier transfer of alcoholic patients from the acute wards to convalescent areas, it cannot be stated with certainty that the duration of hospital stay of these subjects has been significantly reduced by its use. There can be no doubt, however, that medical and nursing problems, insofar as the management of these patients is concerned, have been considerably reduced by the use of promazine.

Psychosis.—The 95 acutely disturbed or confused psychotic subjects and the 8 withdrawn or depressed patients were given promazine orally, intramuscularly, or intravenously in initial doses ranging from 50 to 400 mg. It was found expedient to resort to the larger initial dose intravenously in order to control hyperactivity (when present) as rapidly as possible. In most of these patients, therefore, the initial dose given was not less than 100 mg. They were subsequently maintained on therapy given intravenously, intramuscularly, or orally, depending on cooperation and the reaction to the initial intravenous injection. The response to initial therapy was quite variable. Three patients slept for 24 hours after receiving 100 mg. of promazine intravenously. Some of the more agitated patients slept for only two to six hours after 200 mg. of promazine was given intravenously and required additional therapy parenterally before the increased psychomotor activity could be brought under control. As with patients with severe delirium tremens, a number of subjects did not show any immediate, clinically apparent response to initial parenteral therapy. These subjects were given increasing doses, totaling as much as 1.2 gm. per day, until the desired response was obtained. In some instances as long as five to seven days was required before agitation was brought under control.

It was our impression from these observations that promazine did not correct the underlying psychophysiological disturbance. Hallucinations were not abolished, although the patients appeared unconcerned by them. A manic-depressive patient in a manic phase, whose hyperactivity was controlled by 100 mg. of promazine four times a day, admitted to hallucinatory experiences but stated, "The devil still talks to me but I don't bother to holler back at him." The principal advantage of the drug in this group of subjects seems to be that it permits patients who would ordinarily require restraints to participate in ward activities and care for themselves.

Drug Addiction.—The 42 patients experiencing withdrawal symptoms from drug addiction (41 opiate and one barbiturate) were given 50 to 150 mg. of promazine orally or intramuscularly, usually every four to six hours, for four to seven days. All of the patients with severe withdrawal symptoms, except for one heroin addict, were adequately controlled on a regimen of promazine alone; the heroin addict, admitted on a voluntary basis, was started on therapy with 50 mg. of promazine every four hours but refused it after two doses of the drug and demanded therapy with methadone, which had been promised before hospitalization. All of the other patients dozed or slept during the entire treatment period, awakening only to attend to their personal functions. They men-

tioned their withdrawal symptoms only when questioned and then spoke of their discomfort casually and with an air of detachment. The barbiturate addict had one seizure during the withdrawal period. One subject, whose abstinence symptoms had previously been treated by replacement therapy, voluntarily stated that this was the easiest withdrawal he had ever experienced. Another subject, who had been troubled by frequent emesia, fell asleep soon after the initial dose of 100 mg. of promazine. with no further vomiting. Our experience to date suggests that, for the management of severe abstinence symptoms, relatively large doses of promazine (100 to 150 mg. at four-hour to six-hour intervals) are indicated from the onset of treatment.

Comment

Judging from the response to the administration of promazine in acutely disturbed subjects, it would appear that the presence of a chlorine radical does not contribute significantly to the clinical effectiveness of the parent phenothiazine compound as a subcortical depressant. The doses employed and their duration of action are approximately of the same order as those previously used by us in the management of similar groups of subjects with chlorpromazine.[5] An exact evaluation of the relative effectiveness of the two drugs is difficult, since one cannot quantitate from overt manifestations alone the excitability threshold of the central nervous system. Alternate injections of drugs cannot be compared, since the same threshold is not constantly maintained at any particular level in the patients under consideration.

Alterations in Blood Pressure with Changes in Position in Alcoholic Subjects Both Untreated and After Receiving Promazine

Untreated		After Promazine Administration	
Horizontal	Vertical	Horizontal	Vertical
152/108	110/98	190/120	126/80
190/128	158/100	124/80	70/40
138/120	90/74	108/60	100/60
160/120	130/90	128/90	105/60
145/90	100/60	150/90	80/60

As indicated, the maximum individual dose of promazine initially administered to most of our disturbed psychotic patients was usually limited to 200 mg. It should be emphasized that the amounts herein employed may well have been larger than absolutely necessary but that our objective was to induce a quiescent state as rapidly as possible. Whether it would be possible to induce immediate sleep in all subjects resistant to 200 mg. of promazine by still larger doses has not been adequately determined, although, in a few instances, doses of 300 to 400 mg. produced satisfactory results where smaller amounts had failed. It is our impression that, in situations in which doses of 200 mg. intravenously are not quickly effective, specific depression of subcortical centers alone is unlikely to induce immediate relaxation and that the simultaneous use of small doses of cortical depressants (e. g., pentobarbital) would appear rational. The combination of promazine and pentobarbital has been highly effective in many patients not responding to the former drug alone. The clinical response to promazine combined with relatively small doses of pentobarbital suggests a potentiating action.

In none of the subjects of the present study was vascular collapse observed; nevertheless, even the minor vascular responses to promazine administration that we have noted would appear to warrant separate discussion. Blood pressure and pulse rates were recorded in a large number of subjects before the administration of promazine, immediately upon appearance of clinical effects after the initial dose and at various intervals during the course of therapy. Tachycardia was infrequent after promazine administration, even in alcoholic subjects. Instability of the autonomic nervous system, as manifested by increased blood pressure, tachycardia, and orthostatic hypotension, is a particularly frequent finding among patients experiencing alcohol-withdrawal symptoms. The induction of sleep by promazine in this group did not, however, cause an immediate return of the pulse rate to normal values when the rate had been elevated. The rapid pulse rate often permitted an additional guide to accurate evaluation of the patient's clinical status, since, on awakening, those individuals with persistant tachycardia could usually be expected to complain of residual nervous tension. The need for further medication could thus be anticipated, since the basic tachycardia was neither masked nor aggravated by drug therapy.

In approximately 34% of 177 alcoholic subjects in whom blood pressure was recorded, there was a rise in pressure after promazine administration, most likely due to the agitation or the autonomic disturbance of these patients. The pressure elevation may in some instances have been a response to the drug. In 10% there was no change, and in 56% there was a variable reduction in blood pressure. The average rise was 16/12 mm. Hg, and the average fall was 20/16 mm. Hg. The patients exhibiting the greatest reductions in blood pressure were those who initially had shown significant elevation in pressure, usually associated with agitation or struggling or with autonomic instability resulting from their clinical disturbances. In most of these cases the change in blood pressure was indicative of a trend toward the particular patient's normal level, usually later established during continuance of therapy.

A moderate degree of orthostatic hypotension was observed, particularly among the alcoholic patients, after the administration of promazine. It should be pointed out, however, that spontaneous orthostatic hypotension is not an uncommon finding in this group of subjects. The table illustrates the alterations in pressure on change of position (horizontal to vertical) in five alcoholic subjects prior to treatment and in five alcoholic patients after the administration of promazine. In only one instance did syncope occur on the assumption of the upright position after administration of promazine; dizziness persisting for several minutes immediately on arising was not an infrequent complaint early in the course of treatment. When the reduction of pressure occurred on assuming the upright position, it was associated with an apparently compensatory increased pulse rate, suggesting that promazine does not impair autonomic homeostatic reflex mechanisms.

Reduction of an elevated blood pressure and pulse rate appeared to correlate better with the clinical responses in the agitated psychotic subjects. The induction of sleep by promazine was frequently associated with a dramatic return toward normal of both blood pressure and pulse rate in this group of patients. Of the 42 drug addicts, 36 had blood-pressure recordings two or more times while receiving medication. In two patients who experienced dizziness on standing, shortly after the initiation of therapy, symptoms disappeared after the second or third day of treatment. One patient whose blood pressure fell from 90/60 to 70/50 mm. Hg after initiation of medication, and who complained of hypotensive symptoms on standing, improved despite a subsequent increase in the dose of promazine.

The intravenous administration of promazine, even when large doses were employed, was accomplished usually within two to five minutes. An occasional subject noted a "burning" sensation in the throat, which persisted for only a few seconds. In a large number of patients, promazine was injected intramuscularly in amounts of 100 to 200 mg. Even with concentrated solutions of promazine (100 mg. per cubic centimeter), there were no complaints of persistent pain at the site of intramuscular injection, nor has there been evidence of residual tissue reaction in the injected area. Complications such as jaundice, agranulocytosis, dermatitis, edema, lactation, basal ganglion disturbances, or depression were not observed during these studies.

Summary and Conclusions

Promazine (Sparine), a new phenothiazine derivative, has been used for the management of patients exhibiting the various alcohol withdrawal syndromes, for drug addicts experiencing abstinence symptoms, and for agitated psychotic patients. The drug, in doses of 50 to 200 mg., is effective in inducing sleep and maintaining these subjects in a quiescent detached state. They are easily aroused from sleep to care for their personal needs, thus reducing considerably the work load of the medical, nursing, and attending staff. The drug appears to have other desirable properties, such as potentiation of the action of barbiturates and an antiemetic effect. On the other hand, neither acute vascular collapse nor pain from intramuscular injection has been observed after its use in over 500 patients. In the relatively short periods our patients have received promazine (5 to 48 days), none of the complications reported after the use of other phenothiazine derivatives have been noted.

19th and E streets S. E. (3) (Dr. Fazekas).

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CLINICAL NOTES

USE OF INTRAVENOUSLY GIVEN GANGLIONIC BLOCKING AGENTS FOR ACUTE PULMONARY EDEMA

PRELIMINARY REPORT

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and
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For many years various methods to decrease venous return to the heart have been effectively used in acute congestive failure or pulmonary edema. These include phlebotomy, Fowler's position, tourniquets, digitalis therapy, and many others. In basic research programs Sarnoff,[1] Hilden,[2] Kelley,[3] and others [4] have used ganglionic blocking agents with success in the treatment of pulmonary edema. These, however, were not recommended for clinical use; in fact, Tage Hilden claimed it was not safe after trying it in seven cases. It is our purpose to discuss the place of this method in clinical medicine and establish it as a useful therapeutic concept.

Pathophysiology

It has been shown that, when acute congestive failure develops, certain pathophysiological conditions usually occur. These are (1) reflex increase in peripheral resistance with resultant increase in systemic blood pressure; (2) increased venous pressure, filling pressure of the right side of the heart, pulmonary artery pressure, and transudation of fluid into the alveolar spaces; (3) hyperpnea with decreased ventilatory efficiency; (4) probably decreased left ventricular output (with reference to the right ventricle); (5) marked anxiety; and (6) arterial anoxia. Ganglionic blocking agents tend to return the first four of the above toward normal, especially if the systemic arterial pressure is markedly elevated.

Procedure

Nineteen patients with cardiac asthma or acute pulmonary edema treated 22 times with ganglionic blocking agents were studied in our series. Excluded from the initial study were patients with suspected myocardial infarction, very low arterial pressure, and history of severe angina. In most cases all of the conventional methods of therapy were withheld until approximately half an hour had elapsed after treatment with ganglionic blocking agents and no apparent improvement had occurred. Then therapy with morphine, oxygen under positive-pressure, and other conventional measures was resorted to. This seemed necessary in only two patients, one of whom had had a good response to therapy with ganglionic blocking agents seven weeks before and again two weeks later.

The patients were placed upright on a chair or sat on the edge of the bed with their legs dependent (a posi-

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tion they prefer). Their blood pressure, pulse rate, respiratory rate, degree of pulmonary congestion, degree of anxiety, and, in some cases, venous pressure were recorded before treatment. Then the agent, usually 2.5 mg. of hexamethonium (Hexameton) chloride or 150 to 300 mg. of tetraethylammonium chloride, was injected rapidly intravenously. At two-to-three-minute intervals the above determinations were repeated. The standard form in which these were recorded is seen in table 1. A marked drop in peripheral blood pressure usually occurred in two to five minutes, and, if this was too marked, it could be raised by elevating the legs and thus "transfusing the patient." This produced return of pooled blood in his extremities to his functioning blood volume.

Table 2 is a summary of results for the patients treated. If the patient was completely free from all signs of congestive failure in less than 30 minutes, he was classified as having had an excellent response; there were 12 of these. If he was comfortable and symptom free but retained a few basal rales, he was classified as having had a good response; there were seven of these. These total 86% of our patients. Table 3 shows the effect of treatment. Several patients who had had pulmonary edema before and had been treated with the conventional program were amazed at the rapid relief of their symptoms. This was true in two patients who were treated at home. They had both been previously rushed to the hospital in an ambulance for treatment with oxygen under positive-pressure, tourniquets, morphine, and similar measures. Of the case reports given below, case 1 illustrates a patient successfully treated; case 2, a patient who did not respond to treatment; case 3, a patient who responded to treatment with hexamethonium after other therapies had failed; and cases 4 and 5, two patients treated with trimethaphan (Arfonad) camphorsulfonate, a ganglionic blocking agent adapted to intravenous drip therapy.

TABLE 1.—*Example of Standard Form for Recording Data, Showing Data for Patient in Case 1*

Time, Min.	Blood Pressure, Mm. Hg	Pulse Rate, per Min.	Venous Pressure, Mm. H_2O	Amount of Pulmonary Edema	Remarks
Initial	260/130	150	...	4+	Semicomatose, cyanotic, perspiring profusely; labored rapid breathing; patient placed in chair
0	.....	...	120	4+	Given 2.5 mg. of hexamethonium, I.V.; still comatose
5	220/100	130	100	4+	
11	240/100	100	70	3+	
13	220/90	88	62	3+	Less cyanotic, beginning to respond
15	210/90	88	54	2+	
17	220/100	88	44	2+	No perspiration; breathing no longer labored
19	210/90	90	...	1+	Hexamethonium, 2.5 mg., I.V.
21	200/90	92	46	1+	Completely responsive; resting comfortably
25	200/90	86	46	Basilar rales only	Measurement of venous pressure terminated
40	190/86	86	...	...	Patient sent to ward; condition vastly improved

TABLE 2.—*Results for Nineteen Patients Treated Twenty-Two Times with Intravenously Given Ganglionic Blocking Agents*

Response	No. of Cases	% of Total Cases Treated	
Excellent	12	54	86
Good	7	32	
Fair	2	9	
Patient E. F. with hypertensive cardiovascular disease had good response to test 7 weeks earlier and 2 weeks later			
Poor	1	5	
Patient G. H. (case 2) with hypertensive cardiovascular disease responded only after 2½ hr. after morphine, I.V., aminophylline, mercurials, and lanatoside C therapy, and tourniquets			
Failures	0	0	
Deaths attributed to therapy	0	0	
Total deaths reported	4	18	
Patient C. S. with pneumonitis and lung edema died suddenly 32 hr. after test			
Patient E. C. with myocardial infarction died 8 days after test with complicating bronchopneumonia			
Patient R. H. with pyelonephritis and hypertension died 2 hr. after test			
Patient F. W. with cerebral hemorrhage died 24 hr. after test			

Report of Cases

CASE 1.—A 73-year-old female (R. S.) entered the emergency room with massive pulmonary edema. She had been having severe chest pain for a day prior to admission and respiratory distress for several hours followed by coma. She had had two or three similar attacks in the past, but none so severe as the present one. Physical examination revealed an acutely ill patient in a comatose state, with cyanotic, cold, clammy skin; labored respiration with frothy sputum; and 4+ lung edema. Her blood pressure was 260/130 mm. Hg; pulse rate, 150; and respiration rate, 40. There was 3 to 4+ pitting edema of the lower extremities. The patient was given 2.5 mg. of hexamethonium rapidly intravenously (fig. 1). The blood pressure fell to 180/86 mm. Hg within 30 minutes and venous pressure from 120 to 48 mm. H_2O within 15 minutes. Her lungs began clearing in five minutes except for an occasional sibilant rale. She regained consciousness within 10 minutes. She was hospitalized and placed on therapy with digitalis, diuretics, and analgesics with good clinical results. Electrocardiograms revealed left-ventricular enlargement and strain with T-wave changes in leads V_1 through V_3 suggestive of recent anterior subendocardial infarction. Serial tracings supported this diagnosis. She was discharged on the 22nd hospital day and has been followed at frequent intervals in our medical clinic. She had one recurrence of pulmonary edema, which was not severe and responded well to intravenous therapy with hexamethonium. This patient was previously treated at home for pulmonary edema with morphine, aminophylline, and diuretics, at which time it took between two and three days to relieve her symptoms.

CASE 2.—A 56-year-old male (G. H.) had been under treatment for four or five months prior to admission for hypertension, with very little response. He was admitted to the hospital with acute pulmonary edema. He was cold, cyanotic, and very apprehensive. Meperidine (Demerol) hydrochloride and oxygen, administered by mask, were of no value in relieving his symptoms. One and a half hours later he was started on therapy with intravenously given hexamethonium. The blood pressure dropped from 300/150 to 180/100 mm. Hg; the pulse rate, from 120 to 96; and the respiratory rate, from 40 to 36, with only mild relief of his pulmonary symptoms. After 40 minutes, therapy with intravenously given morphine, lanatoside C (Cedilanid), aminophylline, mercurials, and tourniquets was resorted to. No signs

of improvement could be seen during the next hour, after which time his blood pressure dropped slowly to 130/76 mm. Hg and his pulmonary edema cleared rapidly. The drop in pressure may have been due to absorption of a fair percentage of the hexamethonium, which was inadvertently given subcutaneously. The patient was later placed on therapy with ganglionic blocking agents to control his hypertension, but this had to be discontinued because of increasing nitrogen retention. He was discharged on the 21st hospital day in good condition.

CASE 3.—A 62-year-old obese female (S. V.) with arteriosclerotic heart disease entered the hospital with acute pulmonary edema. Oxygen under positive-pressure, morphine, aminophylline, and mercurials were administered. After four and a half hours no apparent improvement in the patient's condition

TABLE 3.—*Effect of Ganglionic Blocking Agents in Nineteen Patients with Pulmonary Edema*

Patient*	Age	Diagnosis	Blood Pressure, Mm. Hg	Pulse Rate, per Min.	Venous Pressure, Mm. H_2O	Amount of Pulmonary Edema	Respiratory Rate, per Min.	Medication	Remarks
W. R. Before	62	HCVD with recent infarction †	240/110	...	180	4+	..	Hexamethonium, 2.5 mg.	Excellent response
W. R. After			160/100	...	100	0	..		
M. K.(1) Before	48	HCVD with recent infarction	170/110	134	120	4+	..	Hexamethonium, 2.5 mg.	Good response (morphine sulfate, ¼ grain [15 mg.], and oxygen under intermittent positive pressure, 1 hr. prior to test, ineffective)
M. K.(1) After			90/60	110	100	1+	..		
R. S.(1) Before	73	HCVD	200+/130	150	120	4+	Rapid	Hexamethonium, 5 mg.	Excellent response
R. S.(1) After			180/80	86	46	0	Normal		
E. C. Before	64	ASHD † Bronchopneumonia	210/130	104	38	4+	?	Hexamethonium, 2.5 mg.	Excellent response (given morphine sulfate, ⅙ grain [10 mg.], 17 min. prior to test); died 8 days later
E. C. After			70/40	80	26	0	24		
C. B. Before	75	HCVD	140/100	110	160	4+	40	Tetraethylammonium chloride, 200 mg.	Excellent response
C. B. After			106/64	68	50	1+	16		
C. S. Before	74	Pneumonia with lung edema	165/100	104	160	4+	54	Hexamethonium, 2.5 mg.	Good response; died suddenly 32 hr. later
C. S. After			130/80	84	120	0	42		
E. F. Before	93	ASHD	160/90	112	160	2+	28	Hexamethonium, 2.5 mg.	Good response
E. F. After			120/80	100	?	1+ bases only	24		
M. K.(2) Before	48	ASHD	190/120	124	220	4+	28	Hexamethonium, 5 mg.	Fair response; aminophylline, meperidine, and oxygen under intermittent positive pressure resorted to with gradual improvement in 2 hr.
M. K.(2) After			120/90	124	140	3+	22		
M. K.(3) Before	48	ASHD	.....	...	...	...	..	Hexamethonium, 5 mg.	Good response; data not recorded
M. K.(3) After			.....	...	...	...	..		
D. K. Before	57	Cardiac asthma	160/90	120	...	2+	20	Trimethaphan camphorsulfonate, 1% I. V. drip	Excellent response
D. K. After			90/70	104	...	0	18		
F. W. Before	82	Cerebral hemorrhage	160/80	?	Elevated	4+	32	Hexamethonium, 2.5 mg.	Pulmonary symptoms relieved, however, patient remained in coma due to cerebrovascular accident; died 24 hr. later
F. W. After			100/60	100	Normal	0	16		
L. I. Before	75	HCVD	180/100	130	Elevated	3+	36	Tetraethylammonium chloride, 150 mg.	Excellent response
L. I. After			120/80	80	Normal	0	28		
A. W. Before	81	HCVD	200/?	...	...	3+ ‡	Rapid	Tetraethylammonium chloride, 200 mg.	Excellent response; lungs clear in 5 min.
A. W. After			130/80	...	...	0	Normal		
R. S.(2) Before	73	HCVD	254/120	100	...	1+ §	Rapid	Hexamethonium, 2.5 mg.	Excellent response
R. S.(2) After			170/90	76	...	0	Normal		
S. V. Before	62	HCVD	210/120	80	Elevated	4+	36	Hexamethonium, 5 mg.	Excellent response; morphine, aminophylline, and oxygen under intermittent positive pressure ineffective given 4½ hr. before test
S. V. After			120/?	76	Normal	1+	20		
G. H. Before	56	HCVD	300/150	120	220	4+	Rapid	Hexamethonium, 7.5 mg.	Slow response; morphine sulfate, lanatoside C, aminophylline, and mercurial therapy and tourniquets resorted to after 30 min.
G. H. After			130/76	96	?	1+ bases	Normal		
D. A. Before	36	ASHD	210/130	100	...	4+	Rapid	Tetraethylammonium chloride, 100 mg., and trimethaphan camphorsulfonate, 20 mg.	Good response
D. A. After			90/60	100	...	1+	Normal		
V. L. Before	61	ASHD	140/60	...	...	3+	30	Tetraethylammonium chloride, 100 mg.	Excellent response
V. L. After			100/60	...	...	0	16		
A. C. Before	63	ASHD	160/110	...	...	1+ ‖	Rapid	Hexamethonium, 2.5 mg.	Good response
A. C. After			110/70	...	...	1+	Normal		
F. T. Before	68	ASHD	178/100	...	...	3+	Rapid	Hexamethonium, 2.5 mg.	Excellent response
F. T. After			138/80	...	...	0	Normal		
T. B. Before	81	Coronary thrombosis with pulmonary edema	140/85	...	...	...	..	.....	Good response (complete data not recorded except for disappearance of cyanosis and dyspnea)
T. B. After			?	...	...	...	..		
R. H. Before	52	HCVD	190/140	110	...	4+	40	Trimethaphan camphorsulfonate, 2% I. V. drip	Fair response; died 2 hr. after test
R. H. After			120/80	80	...	2+	28		

* Superior numbers after initials indicate patients treated more than once.
† Abbreviations are as follows: HCVD—hypertensive cardiovascular disease; ASHD—arteriosclerotic heart disease.
‡ Marked degree of bronchospasm.
§ Marked dyspnea.
‖ Severe bronchospasm relieved in 5 min.

was noted. She was then placed on therapy with intravenously given hexamethonium (fig. 2). Within 15 minutes her lungs were clear, and she felt restful and was able to go to sleep. Her blood pressure drop was from 210/120 to 130/80 mm. Hg and respiration rate, from 36 to 20. Her hospital course was uneventful, and she was discharged much improved on the 12th hospital day.

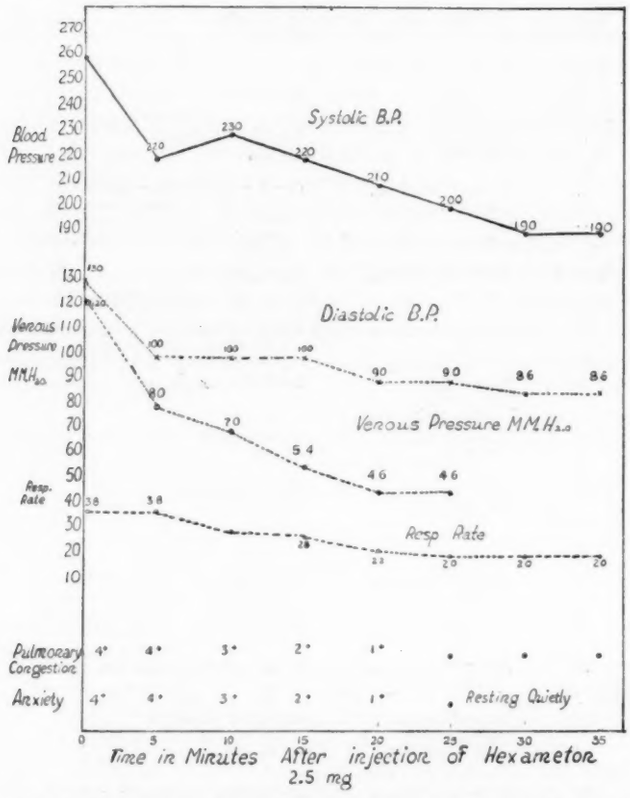

Fig. 1.—Response to hexamethonium therapy of 73-year-old patient (case 1) who seemed to be in terminal condition on admission. Rapid improvement in venous pressure and respiratory rate coincide with clinical improvement.

Case 4.—A 52-year-old male (R. H.) with pyelonephritis and hypertension had been very resistant to treatment with ganglionic blocking agents in the past. Two days prior to admission he became dyspneic with transient chest pain. He failed to respond to treatment with 5 mg. of hexamethonium given at home. He was hospitalized, and, after poor response to therapy with oxygen, intravenously given lanatoside C, diuretics, and meperidine, administration of trimethaphan camphorsulfonate in three times normal concentration lowered his pressure slowly from 200/140 to 130/90 mm. Hg; his respirations dropped from 40 to 28 and his pulse rate, from 110 to 80. He felt considerably relieved but still was in a great deal of distress. Approximately two hours later he went into shock and required administration of levarterenol (Levophed) bitartrate to maintain his pressure. About one hour after levarterenol therapy was begun, his condition worsened and he died. X-rays were taken at the onset of trimethaphan camphorsulfonate therapy and 40 minutes later, when he felt maximum relief. There was some clearing of the pulmonary congestion, but this was not marked.

Case 5.—A 57-year-old man (D. K.) with cardiac asthma had an excellent response in 10 minutes to therapy with less than 30 mg. of trimethaphan camphorsulfonate by intravenous drip.

Comment

We have used the recommended doses of hexamethonium in several normal interns and nurses and six patients with compensated heart disease and have not noted marked drop in blood pressure or serious side-effects. We feel that it is safe if used with intelligence and many times may be lifesaving, especially when used in the home, where many of the agents ordinarily available in the hospital are absent. We have methoxamine (Vasoxyl) hydrochloride on hand for use in case of serious hypotension and have not needed it so far. Lyons,[5] Gilmore,[6] and others have shown that with congestive failure, in spite of the fall in blood pressure, there is a temporary increase in the cardiac output of about 20%. Lyons reports two patients who had dramatic relief of anginal pain of acute myocardial infarction after tetraethylammonium chloride administration. Similar observations have been made in a few patients with angina pectoris at rest in whom no change in the electrocardiogram developed with transient decrease in blood pressure, in one patient from 170/110 to 60/40 mm. Hg.

Anoxia will frequently increase pulmonary artery pressure, and certainly most patients with pulmonary edema must have a high pulmonary artery pressure. It has been shown that ganglionic blocking agents definitely lower pulmonary artery pressure,[7] venous pressure, and therefore the tendency toward transudation into the alveolar spaces. They also have a vagolytic effect, and thus they decrease the hyperpnea, producing a

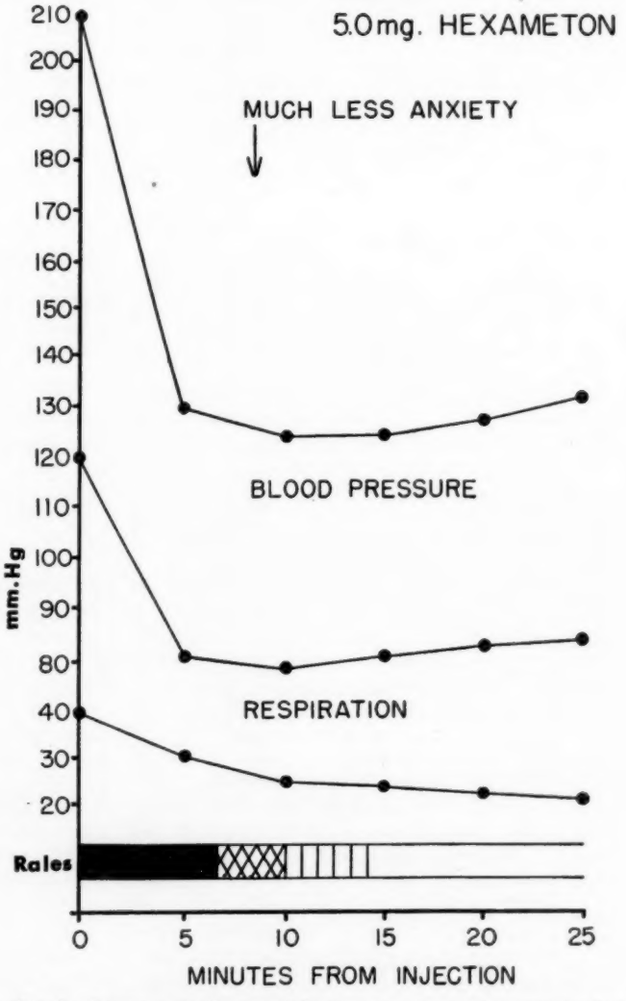

Fig. 2.—Response of 62-year-old female (case 3) to intravenously given hexamethonium after conventional therapy had failed. In bar showing rales, solid black=4+; cross hatching=3+; vertical lines=2+; and white=1+rales or clear.

more effective pulmonary gas exchange. Whether the drop in right-sided pressure is secondary to the systemic drop is unimportant in terms of our need in this situation. The drop in systemic pressure releases an already overloaded left ventricle.

The use of this method without the conventional therapeutic measures was undertaken only to demonstrate its effectiveness, and we are not prepared to say in this preliminary report just how it should be combined with oxygen, morphine, and other therapeutic measures. In several of our cases we found little need of other measures until the patient rested comfortably when a routine program was instituted.

It must be emphasized, however, that, in several other cases, fairly marked pulmonary congestion returned several hours after treatment and we resorted to therapy with digitalis, mercurials, and sometimes maintenance doses of hexamethonium until the condition became compensated. We feel that ganglionic blocking agents have a definite place in the management of acute pulmonary edema and should make the application of tourniquets and actual phlebotomy obsolete. Whether hexamethonium or tetraethylammonium chloride or other agents will be most effective, we are not prepared to say. Tetraethylammonium chloride is more rapid in its action and has a shorter duration. It has caused more profound drops in systemic pressure, but this may be due to our dosage. At any rate, this has not been a serious problem so far.

Summary and Conclusions

Nineteen patients with acute pulmonary edema were treated 22 times with ganglionic blocking agents, and good results were obtained in 19 instances. These agents tend to return certain pathophysiological changes toward normal. We believe this preliminary report justifies considering this method of treatment as practical for clinical use.

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Research on Air Pollution.—The Public Health Service has announced the award of 12 grants totaling $185,988 and two contracts totaling $65,000 for new research projects into air-pollution problems. Ten other projects amounting to $295,367 were announced last October. Under the Air Pollution Research and Technical Assistance Act, enacted by Congress last July, research is now being conducted through four mechanisms: within the Public Health Service; by other federal agencies for the Public Health Service; by negotiated contracts; and through research grants to individuals or groups.

SLIP-ON CERVICAL COLLAR

Otto Eisert, M.D.
and
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Cervical collars have been in use for many years. Probably one of the earliest and best-known collars was devised by Hugh Owen Thomas.[1] It is generally made of heavy cardboard and sheet cotton. Recently Philip

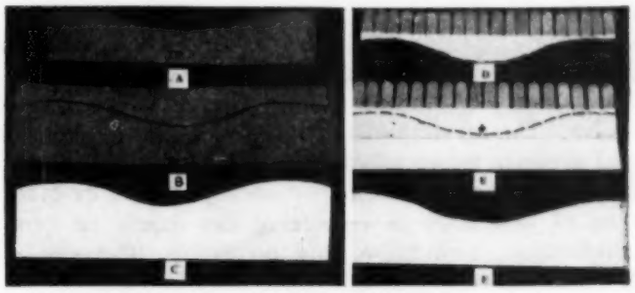

Fig. 1.—Inner and outer felt collars (*A*) cut from felt (*B*) along pattern (*C*). Tongue depressor support (*D*), which goes between felt collars, cut from depressors held together with adhesive tape (*E*) along pattern (*F*). The felt is then covered with adhesive tape. Arrow on *E* indicates chin center.

Lewin [2] described a wrap-around-type collar that is made of hospital cotton and silkaline. The cervical collar can be used as a first-aid measure or in treatment. It exerts traction and distraction and affords support and

Fig. 2.—Patient wearing slip-on cervical collar.

immobilization. The collar is useful in the later treatment of fracture dislocation, dislocation and subluxation of the cervical spine, muscle injuries, intervertebral disk pathology, cervical and brachial neuritis, and neurological conditions such as anterior poliomyelitis.

The cervical collar that we have devised has the following advantages: it can be made readily on an individual

From the Physical Medicine Rehabilitation Service, Veterans Administration Hospital.

basis in the office or clinic; it can be applied easily and with a minimum of movement, which is especially advantageous in cases of acute trauma; and it is inexpensive to make. Stock models may be kept on hand for emergencies. The slip-on collar is made from a pattern that is based on measurement from the lower margin of the mandible to the upper edge of the sternum and from the external occipital process to the first prominent spinous process below, with the patient's head in the anatomic position (fig. 1). Two pieces of felt padding cut to the original pattern enclose tongue depressors. The latter, enveloped in adhesive tape, are cut to a pattern 0.5 in. smaller in measurements than the original pattern (fig. 1). The felt in turn is covered completely with adhesive. The opening of the collar is placed posteriorly and is closed by an adhesive attachment (fig. 2). This may also be accomplished by hooks, eyelets, or other type of fastening. A cervical collar should be firm, comfortable, supportive, and protective. The slip-on collar we have devised fulfills these requirements.

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MYLERAN IN THE TREATMENT OF CHRONIC GRANULOCYTIC LEUKEMIA

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and
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Myleran (1,4-dimethanesulphonyloxybutane) was reported by Haddow and Timmis [1] in 1953 to be an active agent against the Walker rat carcinoma 256. Their experimental studies further disclosed that this compound, unlike nitrogen mustard or roentgen rays, induced depression of granulopoiesis without depressing lymphopoiesis. These results stimulated clinical trials by investigators in England [2] and the United States [3] that subsequently demonstrated that Myleran would produce remissions in patients with chronic granulocytic leukemia. We became interested in this drug not only because the reported results of treatment appeared encouraging but also because its ease of administration on an outpatient basis and its apparent freedom from side-effects offered obvious advantages over x-ray therapy. Our results confirm those already reported.

Methods and Results

Ten patients with chronic granulocytic leukemia were treated with Myleran. Historical data and dosage are summarized in table 1. In all cases the diagnosis was substantiated by clinical examination and bone marrow aspiration studies. Six patients had had previous x-ray therapy with varying responses; four patients had received no therapy prior to treatment with Myleran. In all instances treatment with Myleran was instituted and continued on an outpatient basis in oral dosages of 2 to 6 mg. per day. Peripheral blood studies (hemoglobin level, red blood cell counts, white blood cell counts, differential count, and platelet count) were completed at weekly intervals during the initial phase of therapy and less frequently (every two to four weeks) after a satisfactory maintenance dosage of the drug had been determined. In three patients the therapy was stopped when satisfactory clinical and hematological remission was accomplished and was restarted only when relapse was evident. In the remaining seven patients Myleran therapy was continued in lowered maintenance doses.

All patients under treatment showed evidence of both subjective and objective improvement. Subjective improvement included a distinct feeling of well-being and an increase in appetite and strength within a short time after beginning Myleran therapy. We initially were tempted to ascribe these phenomena, at least in part, to our own enthusiasm, but the consistency of their occurrence prompted us to agree eventually with other investigators who have described similar results and to believe that subjective relief often precedes "objective clinical evidence of response." [3a] Objective evidence of a drug effect other than hematological included reduction in size and tenderness of the spleen and diminution in the size of lymph nodes. One patient with subcutaneous bleeding had clearing of the hemorrhagic phenomena as a concomitant of therapy.

Findings

Leukocytes.—A gradual decrease in the total number of leukocytes occurred in from 20 to 50 days in all patients receiving Myleran therapy. The immature cells disappeared from the peripheral blood. At the time treatment was stopped, or maintenance dosage instituted, the total peripheral white blood cell count and differential count were within normal limits in all except the patient in case 5. The dosage of Myleran in this series was purposely small, so that no patient developed severe leukopenia, which would probably have resulted from higher dosages.[4] We were impressed by the presence of large numbers of multilobed neutrophils in the blood smears during remission. Their significance, however, is unknown.

Hemoglobin Level.—One of the most gratifying features of the response to Myleran has been the increase in hemoglobin levels in nine of the patients under treatment. In the 10 patients the average hemoglobin level rise was 2.1 gm. per 100 cc. during therapy. In four patients the rise in hemoglobin level was as striking as the prompt fall in total white blood cell count (i. e., greater than 3 gm. per 100 cc. in eight weeks). In one instance blood transfusion was necessary during Myleran administration (fig. 1, case 7). A history of this patient in case 7 shows the following data.

A 54-year-old white man consulted his physician in April, 1951, for weight loss, malaise, and insatiable thirst. The white blood cell count was 320,000 per cubic millimeter, with many myelocytic cells; there was splenomegaly and anemia. In July, 1951, he was transfused and placed on urethan, pteroyltriglutamic acid (Teropterin), and folic acid therapy. In August, 1951, 5 mc. of radioactive phosphorus was administered. The white blood cell count fell to 37,000 per cubic millimeter on

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Drs. Berthold M. Stern, A. J. Creskoff, and Frank Rosenberg cooperated in this study.
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Sept. 10, 1951. Radioactive phosphorus was again administered on Dec. 11, 1951. The patient improved clinically. In January, 1952, the white blood cell count rose to 126,000 per cubic millimeter, and by April, 1952, hepatomegaly and splenomegaly were marked, hemoptysis appeared, and the third dose of radioactive phosphorus was administered. Relapse occurred again in September, 1952. Splenomegaly was prominent, and abnormal bleeding in the form of superficial hematomas was seen. Treatment with Myleran was started on Dec. 15, 1952 (table 1). His subsequent clinical course has been quite satisfactory. The patient is symptom-free and maintains normal activity at this time.

Platelets.—With the dosages of Myleran employed in this study, thrombocytopenia, attributable to the drug by other investigators [4] occurred in one patient (fig. 1). In another patient (case 5), who had marked thrombocytopenia before therapy, a prompt and sustained platelet increase became evident during treatment. In a previously reported series,[2b] thrombocytopenia with hemorrhage, necessitating blood transfusion, occurred in two patients receiving Myleran; however, these individuals received daily dosages of 10 to 20 mg. These amounts were three to five times higher than those employed in this study. The hematological data are summarized in table 2.

Bone Marrow.—In all patients examined, the bone marrow aspiration smears made at the time of remission under Myleran therapy showed a decrease in cellularity when compared to pretreatment examination. Although estimation of cellularity on inspection of stained marrow smears is not always a reliable index of effect, the number of immature leukocytes was significantly reduced, and on differential counts the ratio of erythroid to myeloid cells was increased approximately tenfold. Figures 2 and 3 are photomicrographs of sternal marrow aspirate from patient (case 6) before and after therapy respectively. Study of the patient in case 6 revealed the following data.

A 60-year-old white man was admitted to the Hospital of the University of Pennsylvania with pain in the right upper quadrant. The impression at admission was chronic cholecystitis. Routine blood studies showed a white blood cell count of 119,000 per cubic millimeter (fig. 4); bone marrow studies and peripheral blood smear were typical of chronic myelogenous leukemia. Physical examination revealed only moderate splenomegaly (5 cm. below the costal margin). He was discharged from the hospital in September, 1954. Myleran therapy was started, and the patient noted marked clinical improvement, i. e., lessening of anorexia, malaise, and weakness (tables 1 and 2). Bone marrow studies of this patient made on Aug. 15, 1954, before treatment showed the following data: myeloblasts, 2%; premyelocytes, 10%; myelocytes, 18%; metamyelocytes, 42%; polymorphonuclear cells, 21.3%; eosinophils, 5.3%; basophils, 0.3%; prenormoblasts, 0.6%; and normoblasts, 0.3%. The erythroid ratio was 99:1. After Myleran therapy, bone marrow studies on Feb. 19, 1955, showed the following data: myeloblasts, 0.3%; premyelocytes, 2.6%; myelocytes, 8.0%; metamyelocytes, 32.3%; polymorphonuclear cells, 23.0%; eosinophils, 2.3%; basophils, 0.6%; lymphocytes, 5.3%; erythroblasts, 1.0%; prenormoblasts, 14.3%; and normoblasts, 10.0%. The erythroid ratio was 2.7:1.

TABLE 1.—*Myleran Treatment of Patients with Chronic Granulocytic Leukemia*

Case No.	Age, Yr.	Sex	Total Duration of Diagnosed Illness, Mo.	Duration of Therapy, Mo.	Total Dose Myleran, Mg.	Previous Therapy	Comment
1	26	F	12	6	690	None	Ascites splenomegaly relieved during therapy
2	54	F	44	6	540	X-ray	Complains of nausea; otherwise markedly improved
3	64	F	4	3	690	None	Clinically improved, now asymptomatic; activity normal
4	35	M	45	5	600	X-ray and urethan	Subjective improvement most striking single observation
5	58	M	6	5	540	None	Now symptom-free although differential blood cell count remains abnormal
6	60	M	6	5	540	X-ray	Asymptomatic after 3 mo.; treatment discontinued; remission continuing
7	59	M	44	24	1,765	Radiophosphorus, folic acid, pteroyltriglutamic acid (Teropterin), and urethan	Appeared x-ray resistant and "nearly terminal" in December, 1952; in remission at present
8	62	M	5	4	360	.....	Admitted to hospital with angina-leukemia; treated because of anemia
9	64	M	7	3	480	X-ray	Striking symptomatic improvement and regression of spleen size
10	74	F	33	2	180	Triethylene phosphoramide and x-ray	Asymptomatic "for first time in two years"

TABLE 2.—*Laboratory Data in Patients with Chronic Granulocytic Leukemia*

Case No.	Immediately Prior to Therapy				Post-Therapy *			
	Hemoglobin Level, Gm./100 Cc.	White Blood Cell Count, 1,000/Cu. Mm.	Platelets, 1,000/Cu. Mm.	Spleen †	Hemoglobin Level, Gm./100 Cc.	White Blood Cell Count, 1,000/Cu. Mm.	Platelets, 1,000/Cu. Mm.	Spleen †
1	8.0	402	‡	§	13.5	4.7	‡	0
2	11.0	200	200	5	14.2	11.0	248	0
3	14.1	78.6	440	2	15.0	5.4	‡	0
4	11.2	59.0	50	3	11.4	37.0	66	3
5	8.2	377	80	§	13.6	15.0	284	8
6	13.8	120	180	8	11.5	9.0	164	0
7	11.4	400	‡	5	11.6	100	‡	0
8	10.6	72.5	160	1	13.5	17.0	200	0
9	11.0	396	182	9	13.9	38.0	48	2
10	8.2	88.0	190	§	10.0	8.6	182	10

* Figures represent values recorded on Feb. 8, 1955.
† Numbers represent centimeters below left costal margin.
‡ Count not performed. Smears reported as disclosing "platelets in adequate numbers."
§ Massive enlargement of the spleen to "below level of iliac crest."

Comment

It is still too soon to assess completely the place of Myleran as a palliative remedy in the treatment of chronic granulocytic leukemia. Further data must be

obtained after long-term follow-up study to determine this drug's ability to produce and maintain remissions by continuous dosage before its value can be compared to x-ray therapy. Myleran therapy appears to be relatively safe, free from undesirable side-effects, and inexpensive.

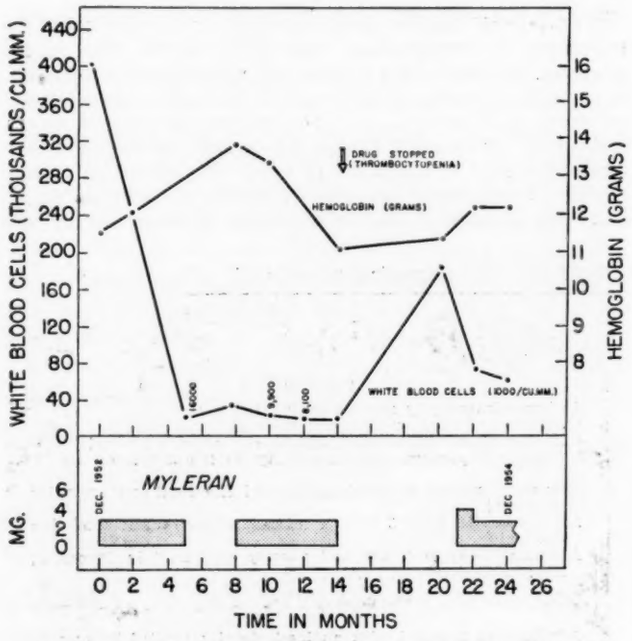

Fig. 1.—Blood studies of patient in case 7 treated with Myleran.

The ease of its administration obviates the need for daily visits to the clinic or the physician. Although the results herein reported are preliminary, we feel that Myleran is an effective agent in the palliation of chronic granulocytic leukemia and should receive continued use, both as

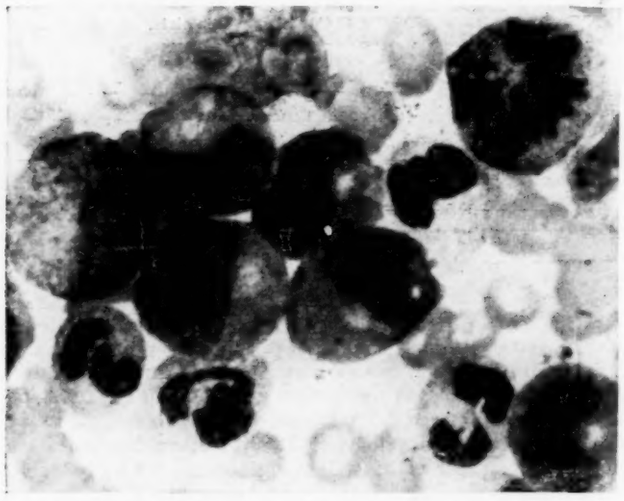

Fig. 2.—Photomicrograph of sternal marrow aspirate from patient in case 6 before Myleran therapy (× 540).

the initial therapeutic agent in newly diagnosed cases and as alternative therapy in cases that have become refractory to x-ray treatment.

Summary and Conclusions

Myleran (1,4-dimethanesulphonyloxybutane) was administered to 10 patients with chronic granulocytic leukemia. One patient developed thrombocytopenia while receiving Myleran; recovery followed withdrawal of the therapy, subsequent administration was uneventful, and remission was again obtained. Myleran is an effective chemotherapeutic agent in the treatment of chronic granulocytic leukemia. In the dosages employed (2 to 6 mg. orally per day), Myleran was safely administered to outpatients.

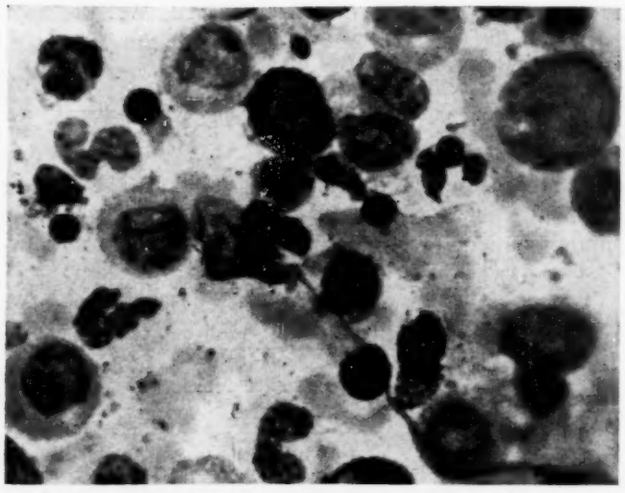

Fig. 3.—Photomicrograph of sternal marrow aspirate from patient in case 6 after Myleran therapy, showing reduction in myeloblasts, premyelocytes, myelocytes, and metamyelocytes (× 459).

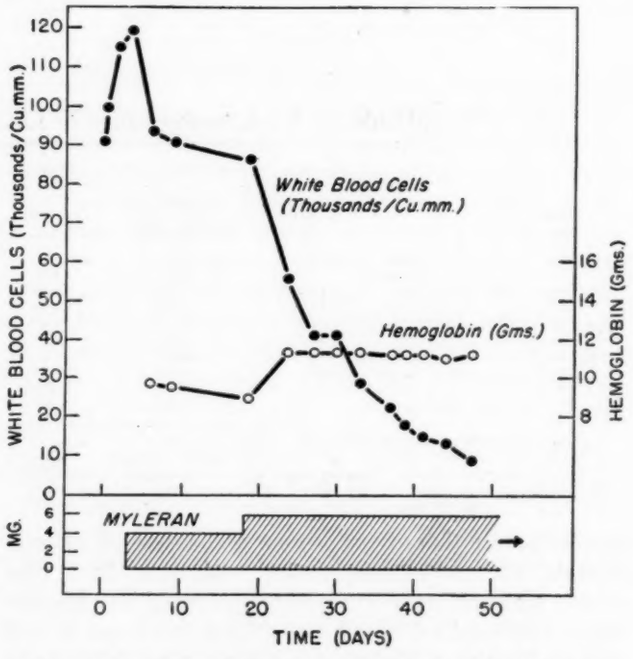

Fig. 4.—Blood studies of patient in case 6 treated with Myleran.

36th and Spruce streets (4) (Dr. Frost).

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4. Footnote 2*b* and *c*.

ADENOMAS OF THE RECTUM AND COLON IN JUVENILE PATIENTS

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and
Aubre de L. Maynard, M.D., New York

To eliminate the existing confusion concerning adenomas of the rectum and colon, it is imperative that writers on adenomas should refer to or state the criteria of their microscopic examination, so that the reader will readily know the basis for their diagnosis. The clinician should effect a close liaison with the pathologist and the radiologist and use the same language. It would, of course, be ideal if the pathologists would agree among themselves as to the diagnostic criteria and would adopt a universal classification. Different pathologists frequently render contrary views on the same specimen. Added to these difficulties is the reluctance, even an aversion or taboo, on the part of some clinicians to insist on digital rectal and proctosigmoidoscopic examinations or to train themselves to perform these diagnostic procedures properly. Brennemann [1] once expressed his belief that digital "rectal examination is an extremely unpleasant experience" and avoided its use. Fortunately, these views are not shared by all pediatricians. Other difficulties, particularly those relating to the biological behavior pattern of the adenoma as well as of its host, are beyond our control, because they are variable and poorly understood at the present time.

Examination

A well-lubricated little finger can be inserted with ease into the anal canal of the newborn baby, while the index finger may be introduced easily into the rectums of infants and children. Only bland or inert lubricating jelly should be used; we abhor the use of jellies containing anesthetic drugs such as dibucaine (Nupercaine) hydrochloride or tetracaine (Pontocaine) hydrochloride or the preendoscopy application to the anal canal of a mixture containing 4.5% of benzocaine (Rectalgan), because these anesthetic agents are strong sensitizers of the perianal and anal integument, causing dermatitis with pruritus. Endoscopy, without preliminary preparation or preceded either by a conventional tap water or, preferably, saline solution cleansing enema, or by an enema solution containing 16 gm. of sodium biphosphate and 6 gm. of sodium phosphate per 100 cc. (but not by cathartics or medicated suppositories), is performed with the patient in the prone jackknife position, effected and maintained by raising the patient's pelvis on one or two pillows, or in the knee-chest or knee-elbow positions on an ordinary flat table.[1a] At no time have we found it necessary or desirable to employ special inverting tables with straps to keep the child "practically immobile." Our present policy is to perform anoscopy and anoproctoscopy on juvenile patients of all ages in the office or clinic without anesthetization, unless a painful lesion, such as an acute fissure, is present. On the other hand, sigmoidoscopy is seldom carried out without induction of anesthesia in uncooperative children or in those under 5 years of age. In any event, when an anesthetic (drop ether) is employed, the examination is best performed in a hospital.[2] The details of the technique of endoscopy have been described elsewhere.[1a]

Special-sized small pediatric instruments for endoscopy have been suggested; to us these appear to be the innovation of the inexperienced examiner or are employed as a matter of habit, custom, or tradition. Because these instruments have a reduced range of visibility, and since the stool passed by a child is almost the size of an adult stool, we employ the adult-sized endoscope (usually ⅝ or ¾ in. [1.6 to 1.8 cm.] in diameter) for all juvenile patients except the newborn infant. In 1948, one of us (R. T.) developed a simple sigmoidoscope with perfect proximal and distal illumination [3] that facilitates the examination greatly. Recently, this instrument has been further simplified.[4]

Fig. 1.—Excessive connective tissue stroma in child (× 7.6).

Pathology

The morphology or the histological architecture of discrete adenomas of the colon and rectum in infants and children [5] is similar to that of adults [6] except for the greater amount of connective tissue stroma (fig. 1) and a greater amount of inflammatory cell infiltration (fig. 2), with a preponderance of eosinophils in some patients (fig. 3). The connective tissue cells in juvenile adenomas tend to be larger and plumper.[5] The occurrence of malignant degeneration has been reported,[7] but none has been observed in our cases, thus confirming Helwig's observations.[5] Nor have we encountered villose (papillary) adenomas in juvenile or adolescent patients.

Presented as part of a Scientific Exhibit, Section on Surgery, General and Abdominal, 104th Annual Meeting of the American Medical Association, Atlantic City, June 6-10, 1955.

The instruments in this study that were designed by Dr. Turell are manufactured by the American Cystoscope Makers, Inc., New York.

Incidence

The exact incidence of adenomas in juvenile patients is still unknown. Helwig's autopsy study of 449 individuals under 21 years of age who had died of noncolonic disorders yielded an incidence of approximately 3%,

Fig. 2.—Photomicrograph showing inflammatory cell infiltration in child (× 400).

with none appearing during the first year of life. A personally conducted sigmoidoscopic study some 15 years ago on 105 asymptomatic boys and girls between the ages of 6 to 16 years yielded only one pedunculate and one small sessile adenoma. On the other hand, Kerr's study [7b] of 349 children with bleeding, protrusion from the anus, and pain in the lower abdomen yielded solitary adenomas in 68 and multiple adenomas in 32 children.

Familial Tendency

Unlike familial polyposis, which is a heredofamilial disease transmitted by genes or caused by gene mutation and behaving as a Mendelian dominant and as both a dominant and recessive in successive generations, either solitary or scattered multiple discrete adenomas of the colon are not considered hereditary. However, our studies of two families,[8] though extremely incomplete as many of the members of the involved families have not been examined, and those reported by others recently [9] suggest that discrete solitary or scattered adenomas may occur in several generations of the same family; two additional families are now under our scrutiny. For the present, these observations impose almost an impossible obligation on the clinician to perform sigmoidoscopy, and, if possible, also proper roentgenography, on all members of the family of patients with discrete adenomas of the rectum and colon.

Clinical Data

This investigation is based on 68 private and clinic patients between the ages of 1 and 16 years with adenomas of the rectum and colon who have been studied, treated, and followed for at least three years. This study is augmented by 31 additional patients who were seen at least once in consultation and presented a similar clinical pattern. Of the 68 cases, 56 patients had solitary polyps, 11 had two or three adenomas, and one had six discrete small sessile adenomas. In 9 of these 12 cases of multiple discrete adenomas, the growths were present in the rectum, while in each of the remaining 3 cases, in addition to the rectal polyps, one adenoma was located in the sigmoid, well above the reach of the sigmoidoscope. The simultaneous occurrence of rectal adenomas with those in the colon mandates the clinician to perform endoscopy and radiography on all patients with solitary adenomas of the rectum. In five patients of this entire series, the adenomas were situated in the descending colon above the reach of the sigmoidoscope; in two cases the accompanying mesenteric lymph nodes were quite prominent.

The adenomas varied in size from about 3 mm. to over 1 cm. in diameter and were pedunculate in 42 and sessile in 26 instances. The pedicles varied in length from a few millimeters to several centimeters; the longest pedicles were noted in the colonic adenomas. All ade-

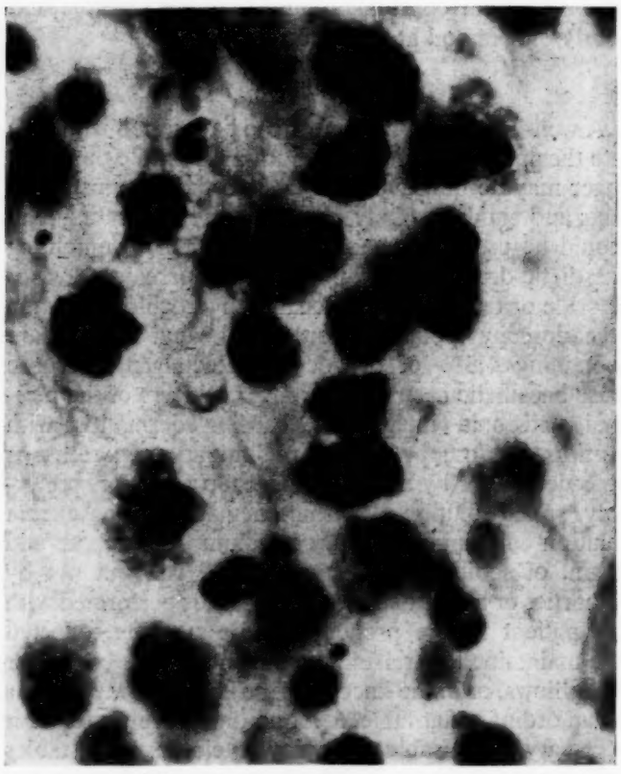

Fig. 3.—Photomicrograph showing abundance of eosinophils in juvenile adenoma (× 900).

nomas were diagnosed as true benign tumors [5] (fig. 1 and 2); malignant degeneration was not encountered in any of these adenomas. We maintain an open mind about malignancy in juvenile adenomas because theoretically such transformation is a possibility, but we are prejudiced against this thought because to date our data and ex-

perience have not yet revealed such an occurrence. It appears that not all pathologists agree as to the precise diagnostic histological criteria of malignancy; in doubtful cases some pathologists render a diagnosis of malignancy, largely for fear of missing one. It is noteworthy that while benign colonic adenomas in juvenile patients are incidently found at routine autopsy after death from other causes, incidental cancer must be an extremely rare finding, as judged by our inability to find a single reference to such an occurrence.

The cardinal symptoms of rectal adenomas were (1) bleeding from the rectum, (2) the passage of blood-streaked stool or blood-streaked mucus, or (3) protrusion of the polyp that the mothers invariably described as a "cherry." The bleeding was intermittent and usually slow and small in amount; relatively profuse hemorrhage occurred only once. The protruding adenomas in several instances had originated at a considerable distance from the anal outlet. The colonic adenomas caused the foregoing symptoms plus pain in the lower abdomen of varying degree and duration. The pain may have been caused by intussusception produced by a polyp. Anemia was the first suggestive symptom in five cases. Only a solitary instance of probable self-amputation of an adenoma has been encountered. The diagnosis was usually made on the basis of the history, digital examination, endoscopy, and barium plus air (double-contrast) radiography (fig. 4). It should be remembered that even the perfected present-day roentgenographic techniques cannot always detect small lesions and have not altogether eliminated the confusing artefacts, the so-called fictitious polyps. Exploratory laparotomy was resorted to in one patient.

We do not believe in fractitional biopsy because the shaving or snipping of a bit of tissue from the surface or summit of a polyp does not usually reveal the character of the body or the base of the lesion. We practice "total biopsy," or the removal of the entire adenoma at its base in one piece or in several large segments, which has real diagnostic and, at the same time, therapeutic value. Tiny lesions should not be removed by electrothermia for biopsy, lest most of the tissue will be rendered useless for microscopy; this does not apply to the larger lesions. Because of many limitations, we have great reservations about diagnoses based on a frozen section of unfixed tissue.

Treatment

The treatment of adenomas in juvenile patients is similar to that of benign adenomas occurring in adults.[10] Adenomas are extirpated because of potential complications such as anemia, intussusception with obstruction, and the alleged potential but far-fetched possibility of becoming malignant. Surgical diathermy without anesthesia was employed safely as an office procedure for the eradication of small to moderate-sized lesions occurring on the posterior and lateral walls of the rectum below the peritoneal reflection in cooperative children. All instruments used in this study have been designed by one of us (R. T.). Adenomas in noncooperative older and in all young children as well as in infants, or adenomas situated above the peritoneal reflection but within the reach of the sigmoidoscope, were eliminated in a hospital under drop-ether anesthesia to avoid inadvertent motion by the patient during electrocoagulation. For this procedure, we prefer the prone, jackknife [18] to the lithotomy position.[11] The entire lesion is usually removed at its base in one or several segments for histopathological examination, even though to date we have not observed malignancy in juvenile adenomas. We rarely employ fractional coagulation in adults, because this procedure is fraught with danger of overlooking a malignancy in the depth of a polyp for some time, especially by the less experienced. Small adenomas and mucosal excrescences were removed with the cold biopsy forceps, and the bases were desiccated thoroughly with a ball-tipped electrode.[10] Pedunculate adenomas were removed at the mucosal base by means of a high-frequency snare,[10] a method that is also applicable for the removal of certain medium-sized sessile adenomas. Thus, the entire polyp and its base can be examined histologically. The safe employment of the high-frequency snare requires dexterity, practice, and experience. On one occasion, when it was technically impossible to loop the pedicle, the stalk near the base of the lesion was grasped and crushed, and the body with most of the stalk of the adenoma was excised and made available for microscopy.[8b] The transected stalk was subsequently

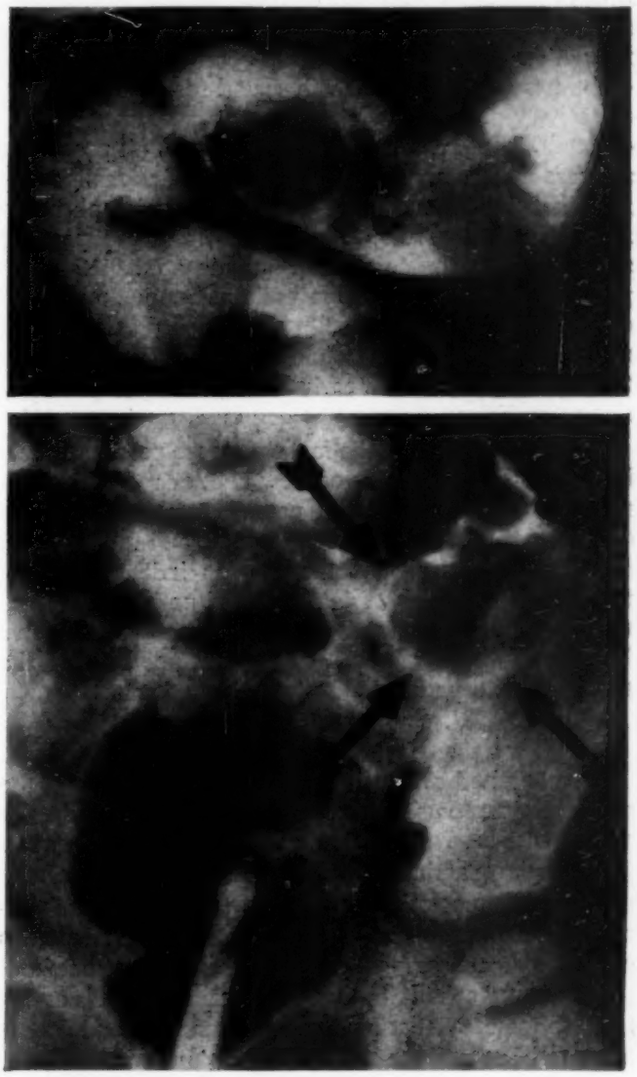

Fig. 4.—Barium (*top*) and air (*bottom*) radiography (double contrast).

coagulated. The double-loop resector was employed once for the extirpation of one moderate-sized, slightly pedunculate adenoma situated on the posterior aspect of the rectum. The safe employment of electrothermic instruments has eliminated the need for surgical excision of these lesions—a policy also practiced by Gross.[11]

Transabdominal colotomy with severance of the stalk close to the base was employed for the removal of adenomas situated above the reach of the sigmoidoscope in four of the five cases; in one case colotomy with resection of the mucosal base was employed for the extirpation of a short-pedicled adenoma.[10] The adenoma was always identified roentgenologically in two sets of films taken preoperatively at various times. In adults,[12] segmental resection of the adenoma-bearing segment of the colon has recently been readvocated for the extirpation of solitary pedunculate adenomas because of the infrequent finding of carcinoma in the polyp. This procedure appears unnecessary in juvenile patients, as malignancy in solitary adenomas or in the mesenteric lymph nodes rarely, if ever, occurs. The principles of preoperative sterilization of the colon emp'oyed in adults [13] are applied to the surgery of the juvenile colon; neomycin and oxytetracycline are used with the added precautions of making sensitivity tests before, during, and after operation, with a view to the early detection of antibiotic-resistant organisms.

Follow-Up Care.—The fact that some persons suffering from adenomas develop new and/or recurrent adenomatous polyps with the passage of time calls for careful, periodic follow-up endoscopic and radiographic examinations for all patients over an indefinite period of time.[10b] Only two of our followed patients have developed small adenomas at new sites; no recurrences have been noted in the area of the original polyps after the successful extirpation of the primary adenomas.

Summary

Bleeding and protrusion from the anal canal are the cardinal symptoms of colorectal adenomas in juvenile patients. These symptoms call for a comprehensive proctologic examination, regardless of the age of the patient. Histologically, the architecture of juvenile adenomas is similar to that in adults, but juvenile adenomas contain a greater amount of connective tissue stroma and inflammatory cell infiltration. The management is essentially the same as that for benign adenomas in adults. It is essential to extirpate all adenomas upon recognition.

25 E. 83rd St. (28) (Dr. Turell).

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DIAGNOSTIC PROBLEMS

PRESENTATION OF CASE

Augusto J. Ramos, M.D., St. Louis

A 47-year-old chemical worker was first seen in consultation by Dr. E. Reinhard on Dec. 19, 1953, when he complained of progressive fatigability, weakness, and dyspnea. Six months prior to this date he noticed that he was pale. He then developed progressive dyspnea on exertion, anorexia, an 8-lb. (3.6-kg.) loss of weight, impotence, a bruising tendency, furuncles, and epistaxis. In his work he had had some contact with benzene, nitrobenzene, chlorbenzene, and zinc dust. Because he was anemic, he was given blood transfusions. His history was negative, except for an isolated attack of asthma in 1938 that he attributed to the inhalation of chemical dust.

Physical Examination.—On admission the patient's blood pressure was 130/80 mm. Hg, his temperature was 98.6 F (37 C), and his pulse rate was 80 per minute. There were a few small, fading ecchymoses on his extremities. The tip of his spleen was palpated at the costal margin on deep inspiration.

Laboratory Findings.—His leukocyte count was 11,950 per cubic millimeter; his erythrocyte count was 3,030,000 per cubic millimeter; his hemoglobin level was 1.9 gm. per 100 ml.; his platelet count was 51,000 per cubic millimeter; and his reticulocyte count was 11.1%. His differential count showed segmented neutrophils 52%, stab cells 12%, metamyelocytes 2%, myelocytes 5%, basophils 2%, eosinophils 2%, lymphocytes 20%, and monocytes 5%. There were 19 nucleated red blood cells per 100 leukocytes in the peripheral blood. Sternal bone marrow punctures were performed without difficulty at three different levels, but on each occasion only a minute amount of bloody material was obtained that contained no clumps of marrow. A review of previous sternal bone marrow slides revealed what appeared to be a hypocellular marrow, and it was concluded that the patient might have aplastic anemia. It was strongly recommended that a surgical biopsy of the sternum be performed, but this was not done because the referring physician was afraid that it might be difficult to control bleeding.

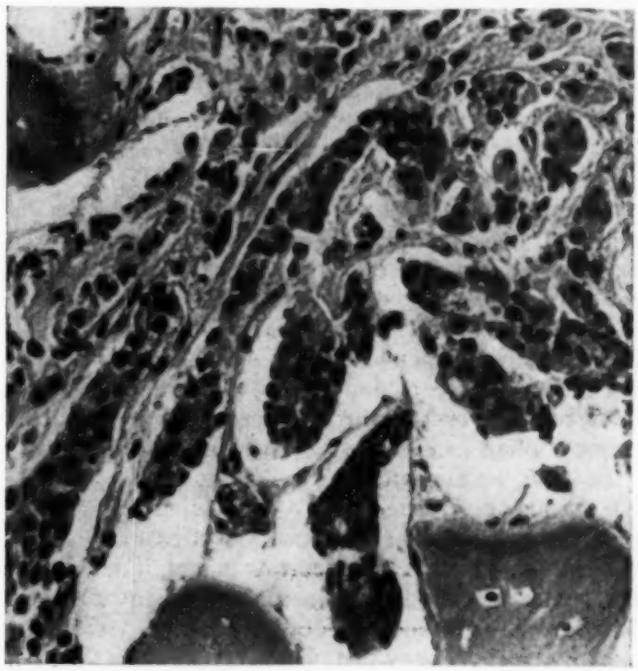
From the Department of Surgical Pathology, Washington University School of Medicine.

Course.—The patient was given cortisone, and early in February, 1954, he received five additional blood transfusions. Despite these measures, he continued to have large numbers of ecchymoses, occasional nosebleeds, and bleeding from the gums. Sternal and left iliac crest bone marrow aspirations yielded no marrow clumps. He was transferred to Barnes Hospital on Feb. 19, 1954, for surgical biopsy of the sternum and further hematological studies. On admission, physical examination revealed a small hemorrhage in the fundus of the right eye and an enlarged, somewhat hard right lobe of the prostate. This was described by a urologic consultant as flat, firm, and fixed. Laboratory studies revealed 12.5 gm. of hemoglobin per 100 ml., an erythrocyte count of 4,250,000 per cubic millimeter; a leukocyte count of 7,750 per cubic millimeters, with 1% basophils, 1% eosinophils, 1% myeloblasts, 8% myelocytes, 10% juvenile forms, 13% stab cells, 20% segmented cells, 36% lymphocytes, and 10% monocytes. There were 7 nucleated red blood cells per 100 leukocytes. The platelet count was 63,000 per cubic millimeter. The Rumpel-Leede phenomenon was positive, with 60 petechiae in a 5-cm. circle. The bleeding time was 20 minutes; the coagulation time in glass tubes was 11 minutes and in silicone tubes, 41 minutes. Clot retraction was poor; the prothrombin time was 14.4 seconds, and prothrombin consumption was impaired (the prothrombin time on the serum obtained after coagulation of whole blood was 15.3 seconds; normal, by our methods, was anything over 25 seconds). Acid phosphatase was 10.3 units per 100 ml. and alkaline phosphatase 8.4 Bodansky units per 100 ml. The Coombs test was negative. Urinalyses were negative, except on one occasion when the urine sediment was loaded with red blood cells.

On the day after admission, a biopsy of the sternal marrow was performed. The sections showed almost complete replacement of the bone marrow by metastatic carcinoma (see figure). This carcinoma had all the microscopic characteristics of a tumor arising in the prostate gland. Following this finding, a metastatic series was done and revealed widespread osteolytic and osteoblastic metastases consistent with metastatic carcinoma from the prostate. Roentgenograms of the chest, an upper gastrointestinal series, barium enema, and intravenous pyelograms were negative, except for the bone lesions. Because of the risk of uncontrollable hemorrhage, a contemplated prostatic needle biopsy was not done. A later blood cell count showed 3,470,000 red blood cells per cubic millimeter and a hemoglobin level of 10.4 gm. per 100 ml. The patient received 2 units of blood while in the hospital. He was started on diethylstilbestrol therapy and was discharged on the 15th hospital day with the diagnosis of carcinoma of the prostate with multiple bony metastases and myelophthisic anemia. He died on May 14, 1955, about two years after the onset of his illness.

Anatomic Diagnosis

Autopsy revealed widespread metastatic carcinoma of prostatic origin. The sections of the prostate gland showed an adenocarcinoma with infiltration of nerve sheaths. Changes attributable to diethylstilbestrol, i. e., presence of naked nuclei, vacuolation of the cytoplasm, and areas of squamous metaplasia, were also seen. Metastases were present in the testes, left adrenal, mesenteric, periaortic, and hilar lymph nodes, and there was extensive involvement of the ribs, the bones of the pelvis, and all the bone marrow in the body. Terminal subacute hepatitis and bronchopneumonia were also present. The anatomic findings of carcinoma of the prostate with extensive bone marrow involvement provide an adequate explanation of this patient's anemia and other clinical manifestations that brought him to a physician. There was no evidence that this patient had any changes that could be related to benzene or its derivatives.[1] Such generalized skeletal metastases from prostatic carcinoma resulting in myelophthisic anemia are not uncommon.[2]



Photomicrograph of sternal marrow, demonstrating metastatic tumor of prostatic origin. Hematoxylin and eosin (× 200).

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COMMENT

Edward Reinhard, M.D., St. Louis

The term "myelophthisic anemia" refers to the type of anemia that occurs in association with space-occupying lesions of the bone marrow. The case presented in this report is an example of the commonest type of space-occupying lesion that produces myelophthisic anemia—namely, metastatic carcinoma to the bone marrow. In my experience, metastatic carcinoma of the prostate produces this type of marrow dysfunction oftener than any other cancer, although cancers of the lungs, breasts, adrenals, thyroid, and urinary bladder are also prone to metastasize to bones that contain actively functioning bone marrow in the adult and may thus cause mye-

From the Department of Internal Medicine, Washington University School of Medicine.

lophthisic anemia. Other diseases that may produce changes in the blood characteristic of this type of anemia include myelosclerosis, certain chronic infectious granulomas, Hodgkin's disease, multiple myeloma, and the primary xanthomatoses. The symptoms manifested by these patients are usually referable to the primary tumor or disease or are due to the anemia per se, such as weakness, fatigability, dyspnea, and palpitation. Deep bone pain has been observed in many patients, but this is by no means invariably present. Splenomegaly is common and may be due to involvement of the spleen by the primary disease, but can occur without such involvement as in the present case.

The only consistent blood findings in myelophthisic anemia are the presence in the blood of immature cells of both the myeloid and the erythroid series. Metamyelocytes, myelocytes, and occasional myeloblasts may be present as well as normoblasts and, at times, erythroblasts. Patients have been observed in whom there were more nucleated red blood cells than leukocytes in the blood. The total white blood cell count is usually normal or reduced but may occasionally be greatly elevated. In spite of the name, anemia is not a consistent finding, and the red blood cell count may even be above the normal range, although anemia usually ultimately develops if the patient lives long enough. The platelet count is generally normal or slightly decreased. The reticulocyte count is often increased. Polychromatophilia, anisocytosis, and poikilocytosis are common. When myelophthisic anemia is secondary to metastatic carcinoma, the bizarre findings in the blood are often the first evidence that metastasis has occurred; in fact, it may be the first evidence that the patient has a malignant tumor. Subsequent roentgenograms of the skeletal system may or may not show bony metastases. More often than not the extensive metastatic disease in the bone marrow is unaccompanied by any roentgenographic evidence of osteolytic or osteoblastic involvement of the bone cortex. This may be due to the fact that myelophthisic anemia is produced by the particularly malignant varieties of these carcinomas, which thus metastasize widely and rapidly and often kill the patient before any of the metastatic lesions have grown to a sufficient size to cause significant bone destruction.

Two diagnostic procedures are important in establishing the diagnosis—needle aspiration of the bone marrow, and, if necessary, surgical marrow biopsy. In many cases, malignant tumor cells may be identified in the material aspirated from the marrow through a needle and stained with either Wright's stain or supravital techniques. If clumps of these cells are present, the diagnosis of metastatic carcinoma can be made with greater certainty. The site of origin of the metastatic carcinoma can almost never be determined from the appearance of the cells in the marrow aspirate alone. The examiner should never be satisfied with a single negative aspiration, but multiple aspirations from different sites (sternum, iliac crest, and spinous process of vertebra) should be performed. If these are all negative, and particularly if no satisfactory marrow clumps have been obtained on multiple attempts, surgical biopsy of the marrow should be done. Excellent preparation can easily be obtained by the use of a trephine to remove a plug of bone from the anterior plate of the sternum, following which a large amount of marrow is scooped out with a small curet. Prior to either aspiration or surgical biopsy, the bone should be palpated, and if any area of tenderness can be identified, this area should be selected for examination. In such tender areas, the prospect of finding tumor cells is greatly enhanced.

Recent studies on the pathogenesis of anemia in patients with carcinomatosis are of interest. Hyman and Harvey [1] studied 45 patients with biopsy-confirmed advanced carcinoma, none of whom showed any overt cause for anemia, such as blood loss, and none of whom had received radiation or tumor chemotherapy. In all 45 patients, tumor cells were found in bone marrow aspirates. Routine clinicopathological tests revealed no evidence of hemolysis, but in 15 of 19 patients studied the red blood cell survival time, as measured by the Ashby technique, was greatly shortened. An attempt was made to estimate the cellularity of "marrow activity" by microscopic examination of marrow aspirates on these patients; 35 of the 45 patients had normal or only slightly hypocellular marrows, and 6 had hypercellular marrows. Ferrokinetic studies with radioisotopic iron (Fe^{59}) including intravenous plasma iron disappearance rates, erythrocyte iron renewal rates, and percentage of Fe^{59} used for erythropoiesis yielded results indicating a normal or increased rate of erythropoiesis in these patients. It, therefore, seems clear that the old concept that the anemia that results from extensive invasion of the bone marrow by tumor cells is due solely to a "crowding out of normal erythropoietic cells" is incorrect. The evidence appears to be convincing that hemolysis is an important, if not the major, factor in the production of the anemia.

This patient had had possible exposure to benzene and several benzene derivatives in his work at a chemical factory. It was at first thought that the patient might have aplastic anemia due to the toxic effect of these chemicals, in which case he would have been entitled to workman's compensation. It was only after the sternal bone marrow biopsy revealed the true cause of the anemia that benzene poisoning could be excluded as an etiological agent. The establishment of the correct diagnosis in this case had important medicolegal implications.

In Rundles' cases [2] anemia, immature granulocytes, and nucleated erythrocytes were often present. With progression of tumor growth, there is an increase in the severity of the anemia. The prognosis is almost hopeless. In patients with demonstrable metastases, diethylstilbestrol alone has little effect, but orchiectomy is often followed by temporary improvement. Administration of diethylstilbestrol to supplement orchiectomy in the group with evident metastases does not seem to increase longevity.[3] It is unfortunate that this patient could not have had the possible advantage of an orchiectomy because of the risk of hemorrhage.

1. Hyman, G. A. and Harvey, J. E.: The Pathogenesis of Anemia in Patients with Carcinoma, Am. J. Med. **19**: 350-356 (Sept.) 1955.

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3. Ackerman, L. V., and del Regato, J. A.: Cancer; Diagnosis, Treatment, and Prognosis, St. Louis, C. V. Mosby Company, 1954, p. 784.

COUNCIL ON PHARMACY AND CHEMISTRY

NEW AND NONOFFICIAL REMEDIES

Monographs and supplemental statements on drugs that appear in this column have been authorized by the Council for publication and inclusion in New and Nonofficial Remedies. They are based upon the evaluation of available scientific data and reports of investigations.

H. D. KAUTZ, M.D., *Secretary.*

Busulfan.—Tetramethylene ester of methanesulfonic acid.—1,4-dimethanesulfonoxybutane.—The structural formula of busulfan may be represented as follows:

$$CH_3SO_2O\text{-}CH_2(CH_2)_2CH_2\text{-}O\,SO_2CH_3$$

Actions and Uses.—Busulfan, a disulfonic acid ester chemically unrelated to the nitrogen mustards and triethylene melamine, resembles these compounds pharmacologically in that it is an active alkylating agent. The cytotoxic actions of busulfan, however, do not affect the germinal tissues, lymphatic tissues, or the intestinal epithelium but are largely restricted to the bone marrow. In small doses, the drug selectively depresses proliferation of the granulocytic elements and, to a lesser extent, thrombocytopoiesis. In larger doses, erythrocyte and lymphocyte proliferation is depressed, and hypoplasia of the marrow eventually ensues. Although busulfan is not soluble in water, it is absorbed in active form from the gastrointestinal tract and is thus effective by the oral route. To date, little is known of its metabolic fate or excretion.

Because of its selective depressant action on granulocytopoiesis, busulfan is valuable in the treatment of chronic granulocytic (myelogenous, myeloid) leukemia. Although some hematologists advocate use of the drug in the initial therapy of the disease, most consider x-ray therapy or sodium radio-phosphate (P^{32}) preferable for this purpose. Whether used initially or adjunctively with radiation, however, busulfan produces remissions in a significant percentage of patients. These remissions are characterized by an increase in the hemoglobin level and circulating erythrocytes, a decrease in the white blood cell count, reduction of spleen size, and a feeling of general well-being. The periods of remission vary from weeks to months and may not be apparent until several weeks after initiation of therapy. Some hematologists favor discontinuing therapy if and when complete remission is obtained and reinstating it only when evidence of relapse occurs. Other authorities favor maintenance therapy. In common with other chemotherapeutic agents, therapeutic effectiveness diminishes with continued use.

Although busulfan depresses hematopoiesis, it is indicated only in chronic granulocytic leukemia and should not be used in terminal cases or in the acute phase of the disease. It is ineffective in acute leukemia, chronic lymphocytic leukemia, Hodgkin's disease, malignant lymphoma, or solid tumors.

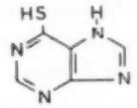
The clinical toxicity of busulfan is related chiefly to production of thrombocytopenia and generalized bone marrow depression. The dosage for initial and maintenance therapy should be governed not only by the subjective response of the patient but also by the hematological response. Complete blood cell counts, including thrombocyte levels, are necessary at least once each week, preferably more often. In the event of hemorrhagic manifestations, a precipitous drop in leukocyte count, or abnormal depression of bone marrow, busulfan should be withdrawn for 10 to 20 days. Extreme caution should be exercised in administering the drug to patients with bone marrow previously depressed by other therapy.

Dosage.—Busulfan is administered orally. The usual initial dose, which must be based on the hematological response, is 2 to 6 mg. daily. If bleeding tendencies, precipitous drop in leukocyte count, or generalized bone marrow depression do not ensue, its use is continued on a daily basis until clinical improvement is noted. This may require 3 or 4 weeks to several months. If maintenance therapy is deemed advisable once the patient is in remission, the usual dose for this purpose is 1 to 3 mg. daily.

Preparations for use as stated for the foregoing drug are marketed under the following name: Myleran.

Burroughs Wellcome & Company, Inc. cooperated by furnishing scientific data to aid in the evaluation of busulfan.

Mercaptopurine.—6-Purinethiol.—The structural formula of mercaptopurine may be represented as follows:



Actions and Uses.—Mercaptopurine is an analogue of the nucleic acid constituent, adenine, and the purine base, hypoxanthine. It is an antagonist to purine metabolism and thus acts by interfering with nucleic acid biosynthesis. Its pharmacological actions are related to a cytotoxicity that is chiefly manifest in tissues with a high rate of nucleic acid metabolism. Thus, hypoplasia of the bone marrow and ulceration of the gastrointestinal epithelium are the outstanding toxic effects of large doses.

Mercaptopurine is useful for the treatment of acute leukemia. Although it does not affect the eventual fatal outcome of the disease, judicious use of the drug has resulted in temporary remissions and prolongation of life in a substantial proportion of patients. In acute leukemia, children generally respond more favorably to the drug than do adults. Remissions may be either complete or partial and vary in duration from only a few weeks to months. Although choice of a chemotherapeutic agent for the treatment of acute leukemia is frequently governed by previous experience, most hematologists prefer the folic acid antagonists and/or hormone administration for initial therapy. When the response to these agents is no longer satisfactory, mercaptopurine is then substituted; however, it can be used to initiate therapy. Like all other chemotherapeutic agents, mercaptopurine becomes less effective in subsequent courses of therapy. In acute leukemia in children, the undifferentiated stem cell or

lymphoblastic types respond somewhat better to the drug than do the granulocytic and monocytic types. In many cases, however, cellular differentiation is difficult or impossible. In adults with acute leukemia, there is little evidence that one cell type responds better than another.

Although more study is necessary before the ultimate status of mercaptopurine in the treatment of chronic granulocytic (myelogenous, myeloid) leukemia can be ascertained, preliminary reports indicate it to be effective in producing remissions in some cases of this disease. It should not be used unless the response to better-established forms of therapy is poor. Beneficial results have been obtained in the early stages of the disease in some patients who were resistant to other forms of therapy.

Mercaptopurine also has been reported useful in the beginning of the terminal stage of chronic granulocytic leukemia when other measures are no longer effective. The drug is ineffective and contraindicated in the treatment of chronic lymphocytic leukemia, Hodgkin's disease, malignant lymphoma, and solid tumors.

The chief toxic effect of mercaptopurine is depression of bone marrow. Leukopenia appears within 5 to 10 days after initiation of therapy, and, if the dosage is excessive, thrombocytopenia and hypoplasia of the marrow ensue. Frequent blood cell counts are mandatory during therapy, since the maximum effect on hematopoiesis may be delayed and the formed elements in the peripheral blood may continue to fall for several days after cessation of treatment. It is important, therefore, to discontinue medication at the first evidence of an abnormally large fall in the white blood cell count or of abnormal depression of the bone marrow. Nausea, vomiting, or anorexia are indicative of excessive dosage. The drug is less toxic to the mucosa of the gastrointestinal tract than are the folic acid antagonists, but ulceration of the intestinal epithelium can occasionally follow its administration. Although the drug is a purine analogue, it is not possible to antagonize its toxic effects by the administration of adenine or hypoxanthine.

Dosage.—Mercaptopurine is administered orally. The usual initial dose for children and adults is 2.5 mg. per kilogram of body weight each day; however, this dosage may have to be reduced in some patients to avoid excessive depression of the bone marrow. If there is no clinical improvement and no definite evidence of leukocyte depression after 4 weeks, the dosage may be cautiously increased up to 5 mg. per kilogram each day. Most hematologists feel that maintenance therapy is indicated during periods of remission in order to prevent early relapse. This is usually accomplished by the administration of 2.5 mg. per kilogram daily; however, it should be emphasized that the dosage of mercaptopurine cannot be empirically defined but varies from patient to patient. Clinical improvement and hematological response must be relied upon as guides to dosage. Blood cell counts should be taken at intervals not to exceed one week, preferably more often, during and after therapy.

Preparations for use as stated for the foregoing drug are marketed under the following name: Purinethol.

Burroughs Wellcome & Company, Inc. cooperated by furnishing scientific data to aid in the evaluation of mercaptopurine.

Cryptenamine Acetates.—The acetate salts of alkaloids derived from an extract of Veratrum viride.—The structural formulas of the component alkaloids have not been determined.

Actions and Uses.—Cryptenamine acetates shares the actions, uses, and toxicity of other parenterally administered extracts of Veratrum viride.

Dosage.—Cryptenamine acetates is administered by intravenous or intramuscular injection. For the management of eclampsia (convulsive toxemia) and hypertensive crisis (encephalopathy), the drug is administered intravenously. For intravenous administration, 1 mg. (0.5 cc. of a solution containing 2 mg. per cubic centimeter) is diluted with 20 cc. of 5% dextrose in water and infused at a rate of approximately 1 cc. per minute. During infusion, blood pressure readings should be made initially at one-minute intervals and the infusion slowed in accordance with the reduction in pressure. If a precipitous fall occurs, infusion should be temporarily discontinued and not resumed for at least 5 minutes, after which it may again proceed until the blood pressure is reduced to the desired level. Subsequent blood pressure measurements should be continued at such intervals as are necessary to determine the need for further infusion. The intravenous administration of 50 mg. of pentobarbital sodium is indicated when emesis occurs.

Once blood pressure is stabilized, therapy may be maintained as follows: In the treatment of preeclampsia (nonconvulsive toxemia) or maintenance therapy of hypertensive crises, cryptenamine acetates is administered by intramuscular injection. In preeclampsia an initial dose of 1 mg. (0.5 cc. of a solution containing 2 mg. per cubic centimeter) may be repeated hourly if necessary and increased by 0.2-mg. increments until blood pressure is reduced to the desired level. Satisfactory maintenance of pressure can generally be achieved by injections at intervals of 3 to 6 hours. Both pulse and blood pressure should be recorded at 30-minute intervals as a guide to intramuscular administration.

Preparations for use as stated for the foregoing drug are marketed under the following name: Unitensen Acetates.

Irwin, Neisler & Company cooperated by furnishing scientific data to aid in the evaluation of cryptenamine acetates.

Cryptenamine Tannates.—The tannate salts of alkaloids derived from an extract of Veratrum viride.—The structural formulas of the component alkaloids have not been determined.

Actions and Uses.—Cryptenamine tannates is similar in actions, uses, and toxicity to other orally administered preparations of Veratrum viride.

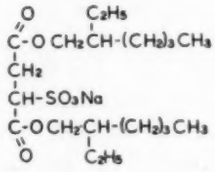
Dosage.—Cryptenamine tannates is administered orally to control moderate to severe hypertension. The initial dosage is 2 mg. twice daily. If the patient is hospitalized, this dosage may be increased on a day-to-day basis until the desired blood pressure level is reached. For ambulatory patients, dosage should not be increased

more frequently than once a week; some clinicians further advise daily determinations of blood pressure. When the total daily dose exceeds 4 mg., the drug should be taken in three divided doses. The first dose usually is administered after breakfast and should be larger than that administered in the afternoon but smaller than that administered before retiring. In order to prevent the tendency toward nausea, periodic interruptions in therapy may be necessary.

Preparations for use as stated for the foregoing drug are marketed under the following name: Unitensen Tannates.

Irwin, Neisler & Company cooperated by furnishing scientific data to aid in the evaluation of cryptenamine tannates.

Dioctyl Sodium Sulfosuccinate, U. S. P.—Bis-2-ethylhexyl sodium sulfosuccinate.—The structural formula of dioctyl sodium sulfosuccinate may be represented as follows:



Actions and Uses.—Dioctyl sodium sulfosuccinate is a surface-active compound sometimes employed as a dispersing agent in externally applied preparations of drugs. The compound is relatively inert pharmacologically when administered orally but lowers surface tension in the gastrointestinal tract. Thus, internally it acts in a manner similar to that of detergents and may permit water and fatty material to penetrate and to be better mixed with the fecal material. This often results in a softer and more homogeneous stool. Limited clinical evidence suggests that the drug exerts little effect on the absorption of fats or fat-soluble vitamins in normal patients or those with cystic fibrosis of the pancreas or with celiac disease. When the drug is given in therapeutic doses, no irritation of the large intestine has been observed.

Dioctyl sodium sulfosuccinate is useful as an aid in the treatment of constipation. Its administration has resulted in softer fecal masses in patients with impaction associated with megacolon, anal fissure, and postoperative anal atresia. It also has been employed successfully in bedridden geriatric patients or infants convalescing from poliomyelitis. Clinical experience with the use of dioctyl sodium sulfosuccinate in less serious but more common types of constipation is not extensive at the present time.

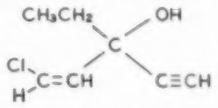
The toxicity of the drug appears to be negligible, and doses far in excess of the therapeutic range have been administered without untoward effects. Because it is sometimes administered with mineral oil, the possibility exists that it might promote the absorption of the mineral oil, with resultant tissue reactions in the mesenteric lymph nodes or liver. Until this possibility can be more fully evaluated, prolonged administration of dioctyl sodium sulfosuccinate with mineral oil probably should be avoided.

Dosage.—Dioctyl sodium sulfosuccinate is administered orally in average doses of 10 to 20 mg. daily for infants and children and from 10 to 60 mg. daily for adults. In certain cases, the daily administration of 50 to 100 mg. in divided doses is required.

Preparations for use as stated for the foregoing drug are marketed under the following names: Colace; Doxinate.

Lloyd Brothers, Inc. and Mead Johnson & Company cooperated by furnishing scientific data to aid in the evaluation of dioctyl sodium sulfosuccinate.

Ethchlorvynol.—Ethyl β-chlorovinyl ethynyl carbinol.—The structural formula of ethchlorvynol may be represented as follows:



Actions and Uses.—Ethchlorvynol, a tertiary acetylenic carbinol, contains a β-chlorovinyl group that distinguishes it from less active compounds of this series. It has been shown to possess hypnotic and anticonvulsant properties in laboratory animals. In humans, ethchlorvynol exerts a mild hypnotic action. Its effect is less profound and not as predictable as that obtained with the barbiturates. In contrast to the barbiturates, ethchlorvynol has not been reported to possess addicting properties, and the incidence of "hangover" effects is less. At effective dosage levels, ethchlorvynol acts rather promptly after administration. Its duration of action is approximately 5 hours. It is absorbed rapidly from the gastrointestinal tract. Animal studies indicate that it is metabolized to an appreciable extent in the liver. The kidneys do not appear to be involved in its elimination.

In clinical trials, ethchlorvynol has proved useful for the induction of sleep in selected patients with simple insomnia. Where pain or extreme anxiety are complicating factors, the drug may not be as efficient. It is therefore useful primarily for patients with mild agitation or mild tension and for patients in whom the use of barbiturates is inadvisable or contraindicated. The drug has not been evaluated as a daytime sedative.

Clinical toxicity studies and long-term feeding experiments in animals have failed to reveal any serious deleterious effects associated with the use of ethchlorvynol. It appears to have a wide margin of safety with fewer and less intense side-effects than are observed after use of barbiturates. Evidence to date has shown no tendency toward development of psychic dependence or habituation; however, until more extensive clinical experience with ethchlorvynol is gained, patients receiving the drug over prolonged periods should be carefully observed for signs of toxic reactions.

Dosage.—Ethchlorvynol is administered orally. For the treatment of ordinary insomnia, 0.5 gm. may be administered at bedtime.

Preparations for use as stated for the foregoing drug are marketed under the following name: Placidyl.

Abbott Laboratories and Pfizer Laboratories, Division of Chas. Pfizer & Company, Inc. cooperated by furnishing scientific data to aid in the evaluation of ethchlorvynol.

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KELOIDS

Keloids are admittedly a frustrating problem for both surgeon and dermatologist. The true keloid is a fibroma usually of the fibrous tissue of the corium. The false keloid, or hypertrophic scar, cannot be differentiated histologically from the true keloid but is commoner and occurs following some form of trauma. Being inflammatory in nature, it often improves spontaneously. The commonest sites of true keloids are the chest, neck, and ears. The tendency to keloid formation is not constant throughout life but may come and go.[1] Keloids are most commonly seen in patients between the ages of 10 and 19, and new formations are uncommon after the menopause. Why in normal wound healing fibroblasts do not continue to proliferate beyond the optimal point is not known, but when they do a hypertrophic scar is produced. It is known that normal wound healing is favored by careful apposition of tissues, good general nutrition, absence of infection, and adequate vitamins of the B complex in the diet. A reversal of these factors may be associated with keloid formation.[2] The cause of hypertrophic scarring in general appears to be excessive irritation in a wound. Tension pulls also favor the development of such scars. One of the chief precipitating causes is exposure to the irradiations that follow an atomic explosion. Other causes are burns, lacerations, surgical wounds, vaccinations, acne, and piercing the earlobes.

Fresh keloids consist of dense bundles of collagenous fibrils and mucinous ground substance. Older keloids are less cellular and contain more bundles and less ground substance.[3] Although histologically keloids cannot be differentiated from hypertrophic scars, a differentiation may be made by having the patient massage the lesion for 15 to 20 minutes daily over a period of months with castor oil. This will have no effect on a true keloid but will soften a hypertrophic scar. It also allays itching if this symptom is present. The differentiation is essential for proper treatment. For the true keloid Kitlowski[1] advises an erythema dose of x-ray and two or three weeks later partial excision, using strict precautions to insure primary healing and avoiding placing sutures in the normal skin. This should be followed by immediate postoperative x-ray therapy in some patients. A hypertrophic scar, on the other hand, should be excised completely, and, if excessive granulation tissue is removed at the time of skin grafting, recurrence is unlikely. Excision alone is inadvisable because 40 to 60% recur. Gathings[4] believes that irradiation is still the most satisfactory single method of treatment, but most authors, including Gathings, have found that some form of combined treatment using the newer drugs gives better results than were obtained in the past without them. The results of radiotherapy depend on the age and size of the keloid.

The adrenocortical steroids have been used in various ways. Ronchese and Kern[5] observed no beneficial results with the use of cortisone ointment and found that cortisone or corticotropin given systemically was of value only as an adjunct to excision and irradiation. They would reserve its use, however, for those patients in whom excision and irradiation without the hormones have failed. Whitehill[2] applied 1 to 2.5% hydrocortisone ointment to the lower half of the excisional wound in removing hypertrophic scars of the abdomen. The upper half of the wound served as a control. The results in most patients were excellent in the treated half of the wound. He advises this procedure in the excision of keloids of all exposed parts and for surgical wounds in persons with a known tendency to keloid formation. Asboe-Hansen and his co-workers[3] injected a solution of 25 mg. of hydrocortisone per cubic centimeter into a series of 56 fresh and old keloids. This treatment has the disadvantage that it may be very painful. It caused softening or disappearance of most of the keloids, an action that in some patients was excessive. The best results were obtained with fresh keloids.

Cornbleet[6] reports that injecting a solution of hyaluronidase in the proportion 150 units of the enzyme per cubic centimeter of isotonic sodium chloride solution into the keloid through a tuberculin or a lock-type syringe causes a breakdown and removal of the ground substance of the keloid and that each subsequent injection becomes easier. These injections are painful, even when a 2% procaine solution is substituted for the saline solution. Other investigators have used this method without success. Gathings[4] injected a series of keloids with hyaluronidase to which Kutapressin (vasoconstricting principle of liver extract in a sterile aqueous solution) was added and found that this so improved the results that excision was not necessary in any patient so treated, although a few required supplementary treatment by irradiation or the application of carbon dioxide snow. An interesting development along an entirely different line was described by Kuitert and his co-workers,[7] who treated two patients with an ultrasonic apparatus. The subjective symptoms were alleviated, and the induration and size of the keloids were reduced, but no histological changes were noted. Since this work is still in the experi-

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mental stage, further developments will be awaited with interest. Meanwhile, in the hands of most plastic surgeons excision followed by immediate postoperative irradiation is the treatment of choice. For those lesions following extensive burns, excision and immediate skin grafting to relieve tension give the best results.

THE PROBLEM DRINKER

It is estimated that over 4,500,000 persons in the United States are problem drinkers.[1] They do not, as some suppose, come mainly from the lower classes but represent a cross section of the entire population. According to Brown,[2] the characteristic they all have in common is that they cannot face failure even in little things; they tend to place the blame for their failures on others; they dream of a brighter future and use alcohol as a means of escaping from an intolerable present. They are usually good workers when sober, getting their satisfaction from a job well done rather than from any financial reward. Few alcoholics realize how completely they lack the ability to face a life without alcohol.[3] Isaacs [4] emphasizes the fact that everyone who becomes intoxicated is not necessarily an alcoholic, and before embarking on a course of treatment it is necessary to exclude those whose overindulgence is temporary or occasional. True alcoholism is compulsive and progressive and in industry can be recognized by certain warning signs, such as increasing absenteeism, especially on Monday, the day after a holiday, or the day after payday; increasing involvement in accidents at work or at home; a change in personality; or a general lowering of efficiency.

In order to secure cooperation in the rehabilitation of the alcoholic it is necessary to understand his needs. On the physical level he may have an organic disease that aggravates his alcoholism. On the psychological level it is necessary to determine what kind of a prealcoholic personality he had.[5] If this was well adjusted, the prognosis is good. If this was neurotic, he may need psychotherapy. If this was psychotic, treatment for the psychosis is the most important consideration. If, however, the problem drinker is a psychopathic personality, and a preponderant number of psychopaths become alcoholics, the prognosis is poor. Attempts to rehabilitate this group have been responsible for the unwarranted attitude that the problem drinker is a hopeless case. As for the patient's environmental needs, his family must learn to avoid nagging, suspicion, and distrust. On the social level the alcoholic needs to belong to a group of others like himself that is organized for some positive purpose.

There is a growing tendency to consider alcoholism a disease. Insofar as this has focused attention on the need of the problem drinker for constructive assistance this has been helpful, but even though the alcoholic needs treatment he cannot be exonerated from legal and moral responsibility for his acts as though he were the victim of a virus. Too great emphasis on alcoholism as a disease may be a disservice to the problem drinker because, although this does not deceive him, it may allow him to rationalize his condition to others.[2] He can be helped only if he undergoes a change of personality.

Long-range rehabilitative measures require that the alcoholic recognize a need to be helped and that he have a genuine desire for help. The compulsive grip of alcohol on the patient can be temporarily broken with the aid of disulfiram, but the results will be lasting only if the patient can be brought to recognize the underlying cause of his alcoholism. Successful treatment requires a supportive attitude. For this purpose Alcoholics Anonymous or some form of group therapy seems to be effective. In psychotherapy for alcoholics it appears that good results depend more on the personality and approach of the therapist than on his technical knowledge.[2] Aside from being unavailable to most patients, psychoanalysis has usually been unsuccessful with these persons. Since the alcoholic is never cured, he must be convinced that he should never take a single drink. Relapse is an ever-present danger. One of the chief reasons for the success of Alcoholics Anonymous, which estimates that it obtains good results in about 60% of those who seek its help, is the fact that the problem drinker who has stopped drinking must be ready at any time to help another alcoholic. Unfortunately this organization is unable to reach more than about 3% of the country's problem drinkers.

It is encouraging to note that, whereas 10 years ago no state had a formal program for the rehabilitation of alcoholics, 31 now have such a program and 3 more are studying the problem.[6] Detroit has established a voluntary counseling service for problem drinkers [7] and reports 70 successfully rehabilitated in a series of 770. By analyzing the characteristics of those successfully treated, it is hoped that the main effort may be concentrated on those with a good chance of recovery. Some large industrial firms, realizing the advantages of salvaging trained employees, are establishing their own programs. That of the Consolidated Edison Company in New York City has been described in detail.[8] It is realistic and has proved of value to the company not only through the rehabilitation of its employees but in the reduction of absenteeism. The program seems also to have had a good prophylactic effect on other employees working for the company. The greatest need at present is for research that will put the various aspects of the problem on a firm scientific basis. Efficient follow-up methods are required so that the results of treatment can be evaluated. Above all physicians could accept greater responsibility in accepting and treating these patients. Hospitals could be more tolerant in accepting these patients for treatment, especially if more instructions on their proper treatment were given to residents, interns, and nurses. The alcoholic does not voluntarily choose the road to ruin. As it becomes more evident that many alcoholics can be helped, communities should take the necessary steps to curtail the preventable losses associated with problem drinking.

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ORGANIZATION SECTION

SOME MEANINGS OF MEDICAL AND PUBLIC OPINION ABOUT THE A. M. A.

This is the second article on the nationwide public opinion poll conducted for the A. M. A. by an independent research firm to find out public and professional attitudes toward doctors and the A. M. A. The first article appeared in the Feb. 11, 1956, issue of THE JOURNAL, *page 471. A later article will deal with some public attitudes about medical fees and other costs of care.*—ED.

The American Medical Association, as most doctors know, has at times been the object of strong criticism and even attack by individuals and groups. Because opposition to the A. M. A. has sometimes been loud indeed, some people—including some doctors—tend to feel that disapproval is more or less general and that a defensive attitude or major changes in activity are necessary.

The findings of the opinion poll do not bear this out. Three facts are particularly striking. First, doctors themselves have a generally high opinion of the Association, and even those who have criticisms do not necessarily want to dissociate themselves from organized medicine; second, important segments of the population, those who might influence opinion, have far more favorable impressions than the public as a whole. The third fact is the refutation of some frequent complaints: that the A. M. A. is a minority-run, lobbying organization that has for its main purpose the defeat of plans for government medicine. The supporting statistics are clear: First, 73% of doctors polled said their impressions of the A. M. A. are either all good or more good than bad. Seven per cent said their feelings are more bad than good, while only one per cent said "all bad." Second, 69% of the public who know the A. M. A. stated favorable impressions, including 43% who said "all good," 26% "more good than bad," 13% "about equal," 4% "more bad than good," and 1% "all bad." However, segments that gave higher percentages of good impressions included mature persons (between 35 and 54) as opposed to the very young or very old; white-collar families, upper and middle income groups, and college and high school trained persons. Editors and commentators, with whom criticism of the A. M. A. has sometimes originated, do not necessarily reflect the feelings of their readers, at least in this area. The survey showed that favorable opinions were 17% less prevalent among editors than among the general public. The conclusion is obvious, that even harsh newspaper criticism may represent only the personal or political standpoint of editors or publishers. While such criticism comes from informed and influential sources and should not be ignored, neither should it be confused with public opinion or considered a major factor in relationships between doctor and patient.

Third, a majority of both doctors and private individuals said the A. M. A.'s policies, however formed, are what doctors want. Sixty-nine per cent of the public and 77% of the doctors agreed with this statement. A third of the doctors and half of the public said the A. M. A. is run by a minority, but many doctors added that all organizations are run by a minority and they approve. Thirty-nine per cent of the public and 66% of doctors said the A. M. A. exercises about the right amount of control over individual doctors. Interestingly, 12% of the public and the same number of doctors said the A. M. A. has not enough control. Only 9% of the public and 6% of doctors said it has too much.

Although political activities were mentioned by a very small number as a criticism of the A. M. A., most people are not unfavorable toward them. One-fourth of the public and a little more than half of the doctors questioned said the amount of this activity is "about right." Only one person in seven (15%) and one doctor in six (16%) said the A. M. A. is too active politically; 4% of the public and 19% of doctors said it is not active enough.

Doctors should be cheered by the finding of only 1% "all bad" opinions by the public. Any organization of such size and strength that was not criticized by at least this many people would certainly be an anomaly.

The finding that slightly less than half of the people polled have any knowledge of the A. M. A. might appear on its face as an indication that the organization has not been successful in disseminating information. But it should be remembered that public polls of various kinds always reveal considerable ignorance of current events or facts; surprising numbers of people do not know the names of their senators and representatives or other important public officials. The poll showed clearly that knowledge of the A. M. A. is more widespread among those who would be expected to have access to general information, who are more likely to read newspapers and books or to be generally better-informed about important topics. These are the people who also might be more likely to discuss political, economic, and social matters with others and to make their opinions known; persons under 55, white-collar workers, upper and middle income groups, college or high school trained, and professional people. These are about the same groups whose approval is more emphatic than the public's in general.

The survey, while revealing criticisms and dislikes, did not turn up any united opposition on any one point. Only one-fourth of those who know the A. M. A. were able to name specific dislikes; no single criticism was named by more than 2 to 4% of these people. The scattered comments included opposition to government medicine (by 4%), political activity and lobbying (3%) and protection of incompetent physicians (2%). It is in-

teresting to note the strong contradiction to this last criticism: maintaining high standards for doctors was the most frequently named "approved" activity of the A. M. A.

Conversely, half of the people who know the A. M. A. were able to state their opinions, from which it seems apparent that those who disapprove generally do so from a vague feeling of antipathy and cannot be pinned down to reasons. Those who approve can support their opinions with specific answers: they listed improvement of professional standards, informing doctors and exchanging ideas, public information and public relations, serving and protecting the public, and policing the profession, schools, and hospitals.

Doctors also are better able to outline their "likes," including THE JOURNAL, meetings and conventions, information and exchange of ideas, and legislative interests and lobbying (10% of doctors). Their major criticism is that it does not poll the full membership for opinion (11% of doctors). Sixty-two per cent of doctors said they approve of the advertising campaign used to oppose President Truman's plan for medical care. Of the 22% who did not approve, 16% said they disliked the method, 1% said they favored the Truman plan, and 2% gave both these answers. Incidentally, doctors were asked which of three men's political philosophies come closest to their own. Their answers: Eisenhower's, 50%; Robert Taft's, 26%; and Franklin Roosevelt's, 17%.

Detailed questions about doctors' opinions of A. M. A. activities revealed many other things, including the following opinions:

Nine doctors in 10 say public relations should be an "important" or "very important" function of the A. M. A. A very small number said it should be left to the individual doctor or local societies. Unfortunately, this high level of support does not guarantee action. The opinion research firm said in its final report that doctors need to take more responsibility in the profession's public relations efforts, specifically by avoiding an overcritical attitude toward the profession or other doctors or by being too much on the defensive with patients and the public.

The A. M. A.'s public relations effort is apparently more successful than doctors know. Over half of the public (56%) said it is doing a "very good" or "good enough" job; a smaller number of doctors (42%) agree. Only one in five people said the Association's PR job is not good enough, while 48% of doctors are not satisfied. This might mean simply that the doctor is more of a perfectionist than his nonprofessional patient or next-door neighbor and tends to be more sensitive when criticized or unappreciated. Reasons given by doctors for dissatisfaction with public relations are that people are unaware of the A. M. A., that there is too much ill-feeling and unfavorable publicity, and that "it always can do better."

On the other hand, doctors agree (by 60%) that the A. M. A.'s public relations effort within the profession is good. One third think it could be improved, largely because the A. M. A. is somewhat distant from the individual physician. Most doctors said they have noticed, and approve, recent changes in the scope and direction of the Association's over-all public relations program.

Finally, the doctors polled had a wide range of suggestions for the A. M. A., most often calling for closer ties with the individual doctor and for more public relations work. Three-fourths of the doctors took advantage of the opportunity to make suggestions. They include getting closer to doctors and polling their ideas, improving public relations and public information, getting social security or pensions for doctors, setting higher standards for medical practice, liberalizing hospital affiliation requirements, and strengthening opposition to government medicine. The first two suggestions were made by about 15% of those answering; the remainder ranged downward from 9 to 3%.

One conclusion from the study is that many criticisms of the A. M. A. by doctors are based on lack of information or actual misunderstanding of basic ideas and procedures. For example, many doctors do not know what annual dues are. Another noticeable finding is that even those doctors who have criticisms of the A. M. A. or its constituent groups still prefer to remain in the ranks of organized medicine and not because they feel compelled to do so.

The survey provides a wealth of material on which the A. M. A. can base future improvements and activities. For the individual doctor, one simple idea emerges as a basic factor in public reaction and opinion: being a doctor does not, by itself, guarantee approval. It is also imperative to be a good doctor and to be a good person.

MEETING OF COUNCIL ON SCIENTIFIC ASSEMBLY

The Council on Scientific Assembly met in Seattle on March 12 and 13 to make preliminary arrangements for the Clinical Meeting, Nov. 27-30, 1956. Auditorium facilities were inspected and reports were given by Dr. M. Shelby Jared, Chairman of the General Committee on Arrangements, and by members of the various subcommittees.

Lectures covering a variety of subjects will be presented in two halls all day and in a third hall half a day continuously and simultaneously throughout the week. Color television will originate at Doctors Hospital, with a continuous program in Civic Auditorium. Medical motion pictures will be shown for a part of each day in one of the lecture halls. The Scientific Exhibit will occupy an area adjacent to the above activities with about 75 exhibits and demonstrations. Enthusiasm for the meeting was excellent and Dr. Jared stated that reports from special committees in Idaho, Oregon, Montana, Alaska, and British Columbia indicated a large attendance.

Other matters considered by the Council included progress reports of arrangements for the Chicago meeting, consideration of a request for a Section on Allergy, discussion of a memorandum from the Law Department concerning activities of one of the Sections, authorization of a request from Audio-Digest for tape recordings, and numerous items dealing with better coordination of all the activities of the Annual and Clinical Meetings.

11TH NATIONAL CONFERENCE ON RURAL HEALTH

The 11th National Conference on Rural Health held on March 8-10, in Portland, Ore., was a graphic demonstration of the enthusiasm and down-to-earth interest that has been repeatedly shown by those who work to improve rural health. Despite the fact that the meeting was held in the far Northwest and traveling weather was bad, about 40 states were represented, and the 600-plus attendance ranked with the 1953 Roanoke, Va., meeting as the largest so far. Much of the attendance could be attributed to the work of the Oregon State Council on Rural Health and the Oregon State and Multnomah County Medical Societies. Dr. F. S. Crockett, LaFayette, Ind., co-founder and Chairman of the American Medical Association Council on Rural Health, which sponsors the conference, said lay and rural attendance was the best on record. Physician attendance, he added, included many more practicing physicians than those in administrative positions.

The conference concentrated on the relationship of family and physician, a primary topic for these participants. Discussion included the family doctor's part in mental health and care of the aged, his responsibility to patients and the community, and their responsibility to him. Speakers also emphasized the role of the doctor as a hub for many rural activities and programs not directly related to health.

Opening the meeting, Dr. Crockett said the physician has become more "modern" and may spend less time with his patients than the "old horse-and-buggy doctor," but he makes up in skill what he may lack in time and familiarity with the patient. The doctor now has "so many positive benefits to give you that you are often well and back on the job before the sickbed has had time to get really warm."

The emphasis on the family's ability to improve medical care by proper use of facilities and by cooperation and understanding of the doctor's problems was brought out in the first panel discussion, "The Family and Their Physician." Representing the family were Mrs. Albert Paulsen, Idaho Farm Bureau Federation, Wilder, Idaho; H. E. Slusher, Jefferson City, Mo., American Farm Bureau Federation; and Harold Berger and Norma June Belt, 4-H'ers from Hillsboro and Yamhill, Ore. The panel physician was Dr. Herbert Mason, Beaverton, Ore.

Both Mrs. Paulsen and Mr. Slusher noted that health begins at home, especially with the mother. By knowing how to take care of minor ills and when to rely on the doctor, the family can best maintain health and get the most out of the doctor's services without abusing them. Miss Belt gave a vivid description of the family doctor's role by telling of her own victory over rheumatic fever with the help of her physician. Mr. Berger described 4-H projects for improving and maintaining personal and community health.

In presenting this panel, Duane Bowler, manager of the Montana Public Health League, reminded participants that a doctor is not just "someone you put off calling until the last moment when all the home remedies fail." Bowler, who is from Helena, Mont., said every family needs a personal, "family" physician, who is interested in the family as individuals, "not just case history cards." He suggested that families acquaint themselves with a physician and give him the needed background so that, when an emergency or illness arises, he will not be a stranger. He then advised following the physician's instructions and not rushing to another doctor if the illness is not cured immediately. He said patients should let the doctor know if his instructions are hard to follow or if there are other difficulties.

All of the panels were followed by lively discussion sessions under the leadership of Jack Wright, director of the Bureau of Community Development, University of Washington, Seattle. One of the most interesting sessions was the discussion of mental health, which broadened to include many aspects of community and rural life that contribute to, or impede, good adjustment.

The fact that "the forces of conformity" are stronger in rural areas is both a help and a hindrance to mental health, according to Dr. J. Lester Henderson, Seattle, chairman of the mental health committee of the Washington State Medical Association. Dr. Henderson presented the topic before the panel discussion. He said the strong tendency toward conformity provides strength to resist stresses that might cause mental difficulties. But, on the other hand, it presents "negative pressures," especially for those who are different, for "any foreign family, any city dude, anyone with new-fangled ideas." The biggest difficulty is in family tensions, particularly where there is not "sufficient room for difference of opinion and adolescent rebellion," he said. "Ideally, our children would never need rebel to express their ideas and 'test out their wings.' But the shifting pattern of the expression of love between parents and children essential to growth, is such that for practical purposes some rebellion is the rule," he said, noting that the need for initiative in using new ideas is particularly strong among rural families.

Mrs. Clarence Grund, Dallas, Ore., farm mother, said one way to combat this problem is "to teach our children tolerance. Then they will be better able to accept the fact that the person who is maladjusted may not have had it so easy, or had much understanding." She also said children should be taught to realize the problems they may have to face, not by parents "taking away fear" but by their giving children a way to deal with it. "We should teach them that while there are some hurts in this world, they frequently lead to long term goals. For instance a child should be shown that a visit to the doctor for an injection may be painful but it will prevent worse consequences," she said. "If you shield a child, take all his bumps for him, then when he goes out into the world he will receive a lot of bumps and mama won't be there to protect him."

Both parents and schools can help to shape the child's personality, according to Harold Stapleton, Dallas, Ore., representing the father on the "family panel." He said one problem is that most people have a strong resistance to anything labelled "psychiatric" or "mental." Such

1. Among early registrants at the A. M. A. National Rural Health Conference were (left to right at right of table) Harley Libby, Jefferson, Ore., president of Oregon State Farmer's Union; Mrs. Richard Moeller, Cornelius, Ore., Gerry Bell, public health worker, John Day, Ore.; and Irene Thompson, R.N., Public Health Nursing Director, Portland, Ore.

2. Two national radio network programs told the country about activities at the conference. Mrs. M. C. Smith, Corvallis, Ore., president of the Home Economics Extension Council, and Mrs. Mabel Mack, secretary to the Oregon Rural Health Council, extended official greetings to Milton Bliss, Chicago, producer of NBC National Farm and Home Hour.

3. Pausing between sessions were Mrs. Haven Smith, Chappell, Neb., of the American Farm Bureau Federation; Miss Gertrude Humphreys, Morgantown, W. Va., state leader of home demonstration work; and Leslie Streight, Oregon City, Ore., of the Future Farmers of America.

4. Dr. F. S. Crockett, Lafayette, Ind., Chairman of the A. M. A. Council on Rural Health, talks with Louis A. Rozzoni, Clements, Calif., president of California Farm Bureau Federation, and Beatty H. Dimit, Indiana, Pa., chairman of National Grange Interim Health Committee.

5. At the milk bar set up for registrants by the Oregon Dairy Council, Mrs. Bernice Luxford, Clatskanie, Ore., president of the Oregon Rural Health Council, serves Mrs. Charles W. Sewell, Otterbein, Ind., one of the founders of the annual Rural Health Conference.

6. Climaxing the 1956 conference was the annual banquet. Dr. Dwight H. Murray, Napa, Calif., A. M. A. President-Elect who spoke at the banquet, is greeted by Dr. Eldon G. Chuinard, Portland, Ore., president of the Oregon State Medical Society, as John Belt, Portland, Ore., president of the Student A. M. A., and Mrs. Mason G. Lawson, Little Rock, Ark., President of the Woman's Auxiliary to the A. M. A., look on.

names often create anxiety among people for whom mental health programs are intended. He added that there is also some confusion among school people because they don't know how they can help develop children's personalities or handle mental hygiene programs for youngsters.

A farm boy, Laurence Ashley of Kelso, Wash., agreed that young people are often "scared" by these labels and fear if they get involved in mental hygiene programs "they will find something wrong with you. But if you get a firm background from your family then when trouble comes along there is someone to go to for reassurance, who will help you to realize that even if you have problems now, later you will 'blossom out' and have happiness, too."

Patsy Kiser, also from Kelso, said 4-H work was an extremely important way for farm youngsters to adjust, by helping them to express themselves, meet people, learn to work with and understand them, and develop self-confidence.

The Rev. Robert N. Peters, pastor of the Methodist churches of Sutherlin and Wilbur, Ore., said it was significant that he was included among the panel speakers. "The pastor is not always considered important," he said. "He is thought of as someone who deals with mysteries and not with everyday things, someone who hands down answers, who simply says 'it's in the Book.' But people are beginning to think of things in the team spirit. We need this spirit, need to 'relate' more to one another, and to our God." He said that, in discussing the family's role in both physical and spiritual health, it must be remembered that "too many families are not intact." In rural areas, children's difficulties resulting from this are more of a problem because most farm communities do not have a psychiatrist or other psychiatric help. They must turn to the family doctor, he said.

The family doctor, on the other hand, also faces problems, according to Dr. R. W. Farnsworth, general practitioner of Cedar City, Utah, and chairman of the Utah State Medical Association's committee on rural health. He said at least 50% of physical illnesses have some emotional component, but the country doctor is often so busy he cannot always find the underlying problem. An important factor in alleviating these problems, and thus aiding the doctor to do his job, is building up "a feeling of belonging." That is where the pastor, the members of the family, and others in the community can help, he said.

Another problem that may be accentuated in rural areas lacking all the organizational facilities of the city is that of the older person and the chronically ill. Mrs. Clifford Zollinger, Portland, governor's committee on the aging, and Dr. Robert Heilman, director of chronic disease and hospital licensing, Oregon State Board of Health, discussed two facets—projects leading to independence for older persons and institutional care, especially in nursing homes.

Among the projects described by Mrs. Zollinger were Senior Craftsmen of Oregon, Inc., a Portland nonprofit cooperative that provided space for older persons to make handcrafted articles, as well as an outlet for sales; a New Hampshire craft project of wider scope; a cooperative housing project by the San Francisco Committee for Emigres, which provided housing and meals at a total cost (including operating expenses, interest, and amortization on the property) of about $65 a month per person; and the Patton Home in Portland, an institution for the aged turned into "a real home" by volunteer workers, who are now developing a supervised activity and training program.

Mrs. Zollinger pointed out that many of the difficulties and disabilities of the older population are "not inherent in age itself but are the result of conditions which can be changed." However, she said "nothing happens unless someone takes the initiative. Many older people make excellent adjustments, even to very trying conditions, others are able to adjust satisfactorily with the assistance of their families; some, however, have problems which cannot be solved by the older person and his family but require community action," she said. Some of the things that can be done require only that older persons be brought into contact with facilities already available but unused.

Mrs. Zollinger added that the Portland Community Council committee on services to the aging is developing a series of "how to do it" pamphlets outlining the needs of older persons, suggested programs for filling these needs, and guides to actual planning and carrying-out of these programs.

Dr. Heilman stressed the need for making the nursing home an integral part of the community's social and economic pattern, as well as providing continuity among the home and other spiritual, medical, and rehabilitation facilities. He said a major problem is obtaining graduate nurses for these homes; another difficulty is providing steady physician care, particularly where nursing homes are scattered in fringe areas or isolated rural locations. He mentioned a recently enacted Oregon licensure law sponsored by the state Nursing Home Operators Association to raise standards and said he hoped other states would follow this lead. It also would be appropriate "to suggest that sociological research methods should be developed to meet the successes of scientific medical research," he said, adding, however, that the solution to the problem of the aging still lies within each community and not in the government.

A basic point brought out in a discussion of voluntary health insurance is the need for better plans for rural persons. One of the problems faced by the farm dweller who wants insurance is the fact that lower-cost group plans, usually provided through offices or factories, are not available to him. Special insurance programs aimed specifically at rural persons would be helpful, panelists said.

Opening the discussion, Seattle consulting actuary Wendell Milliman said abuses of voluntary health insurance are a major cause of its shortcomings. Two of the biggest problems are the prospective customers who don't buy until they know or strongly suspect they need medical attention, and the policyholders who use their

insurance unnecessarily. Four facts the public should know, Milliman said, are as follows: 1. The cost of good medical care is high, and insurance carriers must compete for the consumer dollar with sales of "more pleasant services." Both factors tend to raise insurance prices. 2. If health insurance is to be provided on a free enterprise basis to large numbers of people, it has to be sold; obviously the price must cover the cost of merchandising. 3. To keep costs down, limitations must be placed on amounts of payments for medical services and on length of hospital stay covered. 4. It is obvious that insurance cannot be issued to persons with "pre-existing" conditions, since otherwise insurance companies frequently would be required to pay substantial amounts to individuals who would buy insurance because they know they need medical care. Such people undoubtedly would drop their insurance after recovery, reinstating it only when necessary. For these reasons health insurance cannot be expected to cover the entire burden of medical care costs but must be considered an aid to payment.

Members of the panel discussing other aspects of insurance were Dr. Francis T. Hodges, San Francisco, president of the California Physicians Service; Harley Libby, Jefferson, Ore., president of the Oregon State Farmers Union; Helen Becker, Lincoln, Neb., University of Nebraska agricultural extension service; Ben Robinson, Imbler, Ore., past-president of the Oregon Farm Bureau Federation; H. Tom Thorson, Okanogan, Wash., manager of the Okanogan County Medical Service Corporation; and Gordon Baine, San Francisco, vice president of the American Associated Insurance Companies.

Climaxing the meeting was an always-popular part of the conferences, the session devoted to "success and achievement" stories. Completed projects and the speakers describing them were a model dental health project in Bend, Ore., by David M. Witter, D.D.S., Portland, director of the Oregon State Board of Health's dental health section; the Wisconsin Agriculturist and Farmer poll, by W. C. Voskuil, Racine, Wis., editor; an agricultural labor center, health and housing, Nyssa, Ore., by Jared Lewis, district manager, Amalgamated Sugar Company; a community health plan in Packwood, Wash., by Robert Baker, Packwood community leader and businessman; and a hospital construction project in Ferry County, Wash., by James Davis, president, Ferry County Hospital, Republic, Wash.

All of these descriptions emphasized the ability of community-wide action, initiated by private citizens or groups and carried through largely without outside help, to solve community problems or improve existing facilities. Summing up the conference was F. L. Ballard, associate director of the Agricultural Extension Service, Oregon State College, Corvallis. He said that many measurable improvements in rural health in the past 20 years can be enumerated. "But our experience here in the last few days of this [conference] points out clearly to us that they constitute no grounds for complacency," he said. "The stark fact remains that health conditions in the rural regions the country over are in many measurable segments lagging far behind what reasonable judgment would consider optimum conditions, most areas showing disadvantages compared with metropolitan areas, and of course, some rural areas lagging far behind other rural areas."

Among the factors he listed as contributing to continuing health problems are a constant need for health education; lack of personnel or uneven distribution of it; need for major hospital centers, clinics, and rural health centers, and a need for "awakened community consciousness." Ballard said improvements are a challenge to society as a whole but first of all to those most concerned—the rural and farm people themselves, who "should be part of the dynamics of shaping health services as well as receiving them."

A highlight of the meeting was the annual banquet attended by more than 400 people, including five members of the Council and Mrs. Charles Sewell, 75-year-old Otterbein, Ind., farm woman who initiated the idea of the Rural Health Council and co-founded it with Dr. Crockett. Dr. Crockett presided at the dinner and introduced the special guests, Mrs. Mason G. Lawson, Little Rock, Ark., president of the A. M. A. Woman's Auxiliary, and John Belt, Portland, president of the Student American Medical Association.

Speaking at the dinner, A. M. A. President-Elect Dwight Murray, Napa, Calif., physician, cited several successful rural health programs and said he wants physicians to take such community activities as "a personal responsibility. Much of the phenomenal medical progress of the past 25 years has been achieved because of the support—both moral and financial—obtained from the general public," he said. "The continued interest of the public in medical affairs will grow as the interest of physicians in matters outside the medical profession increases. That is why I am calling on doctors everywhere I go to mix with their neighbors and to share in their interests and their projects."

Also speaking at the banquet was Louis A. Rozzoni, Clements, Calif., president of the California Farm Bureau Federation. Rozzoni, a native Italian, sketched his own story of successes and failures as a businessman and farmer and said it is not true that "only those who are successful speak well of this country." Rozzoni said there are "always people who want something for nothing" and that we should stop trying to solve economic problems by "magic words such as 90 per cent parity," and by "old slogans I heard so long ago I thought I had forgotten them—like big versus small, privileged versus underprivileged.

"We are too prone now to listen to these seditious words, and to believe that our trouble is simply that someone else has more opportunities than we. We have a wonderful opportunity today, and even more so tomorrow, not by changing the system we have but by doing the same thing we are doing—only more of it and better." He said those who try to solve the country's economic problems by taking from those who have and giving it to those who have not will solve no one's problems "except the socialists, who have been trying to do that for years."

COUNCIL ON MEDICAL SERVICE

A STUDY OF MATERNAL MORTALITY COMMITTEES

This is part 3 of a series of articles by the Committee on Maternal and Child Care of the Council on Medical Service reviewing the organization and operation of maternal mortality study committees. The purpose of this specific study is to obtain information that may be utilized in the preparation of guides that in turn may be helpful in the development and operation of maternal mortality committees in other areas of the United States. The descriptive material to follow is concerned with the Committee on Maternal Welfare of the Philadelphia County Medical Society.

Philadelphia Maternal Welfare Committee Study

History.—The need for a study of maternal deaths became apparent to the Philadelphia County Medical Society when a Citizens' Survey Committee sponsored by the Philadelphia Chamber of Commerce in 1929 called attention to a number of facts. Two of these were as follows: 1. Discrepancies were noted in the maternal deaths as published by the Philadelphia Bureau of Vital Statistics and the United States Bureau of the Census. 2. Philadelphia's birth rate had been falling for several years, but the maternal mortality rate had remained rather constant for the previous 10 years; this occurred even though there had been a reduction in the number of septic deaths over that period, an increased hospitalization of maternity patients, and a reduction in midwife deliveries. Therefore, the medical society established the Committee on Maternal Welfare in 1930 and charged it with the specific duty of conducting a survey and analysis of the maternal deaths in Philadelphia. The committee's three-year report [1] was published by the society in 1934. This was a 143-page detailed report stating the problem as found in Philadelphia and giving specific recommendations to physicians, organized medicine, hospitals, nurses, official and voluntary health agencies, and the laity. The committee recommended that, in order to hold any gain made by this program and in the interest of further improvement in the maternal mortality rate, the study of maternal deaths be continued. It has continued to the present day and is considered an integral and indispensable part of the medical society's activities. The committee's objective is to review all maternal deaths so that information may be obtained for use in informing the profession and the laity as to ways and means of eliminating preventable deaths, thereby reducing maternal mortality.

Members.—Membership in the committee varies from year to year. Currently there are 18 voting members. Since its formation in 1930, the committee has had only three chairmen. The first two served 10 years each, and it is the consensus of the society that such committee chairmen should serve that length of time unless the individual should desire otherwise. The chairman and members are appointed by the president of the Philadelphia County Medical Society, with the members being recommended by the committee chairman. Members are not required to be board certified obstetricians; however, because of their special interest in this work, obstetricians are generally selected and in many cases are staff physicians from the city's five teaching hospitals. In each hospital having an obstetric department, a hospital representative is selected to act in a liaison capacity between the committee and the hospital. In some cases that representative is a committee member.

Scope of Study.—Any death of a woman who is pregnant or up to two months post partum is classified as a maternal death. Also so classified is any woman who dies of choriocarcinoma, regardless of the interval after pregnancy. All maternal deaths are studied by the committee. A death classified as obstetric by the committee must be due to the obstetric causes as listed in the sixth revision of the International Statistical Classification of Diseases, Injuries and Causes of Death, under "Deliveries and Complications of Pregnancy, Childbirth, and the Puerperium," or be due to the anesthetic, to a choriocarcinoma, or to a disease that would probably not have caused her death had she not been pregnant. A death is classified as nonobstetric if it is due to an accident or to a disease not primarily related to the pregnancy. There are no definitive criteria, however, to determine whether the death may be classified obstetric or nonobstetric when a pregnant woman dies as a result of some cardiac, tuberculous, or other disease. This is determined by a vote of the committee and is based on the facts as analyzed and the clinical judgment of the members. All nonresident maternal deaths that occur in Philadelphia are also included in the study. No provision has been made for studying morbidity cases as yet.

Operation: Agencies and Personnel Involved.—Close cooperation in the operation of the maternal mortality study exists between the Philadelphia County Medical Society and the Philadelphia Department of Public Health. This is evidenced in many ways. Office space and secretarial assistance are provided by the Section of Maternal and Child Health, and statistical consultation services are available through the Office of Statistics and Research of the Philadelphia Department of Public Health. The medical society also provides office space plus supplies and postage. One of the committee members is a paid consultant to the department of public health, and other staff physicians assist with various aspects of the study.

All death certificates are required by law to be filed with the Pennsylvania Department of Health within three days after a death. The Philadelphia deaths in turn are transcribed and delivered to the Office of Statistics and Research of the Philadelphia Department of Public Health. This office supplies the Section of Maternal and Child Health with transcripts of all maternal death certificates. The committee secretary sends to the committee recorder (appointed secretary) the name of the deceased and the registration number, place and date of death, and code or classification number for cause of death. The secretary also sends a detailed ques-

tionnaire to the representative at the hospital where the death occurred or to the physician signing the certificate if the death occurred at home. A postal card is sent at the same time notifying him of the questionnaire and asking him to give it prompt attention and return it to the recorder. This questionnaire is usually filled out by the attending physician. However, if the attending physician is negligent in providing information, the hospital representative or a committee member gets the information from the record room librarian and through a personal interview with the attending physician or other physicians with knowledge of the case if the attending physician is absent. If it is a medical examiner's case, the "liaison" member of the committee who is employed by the Philadelphia Department of Public Health secures the necessary data from the office of the medical examiner.

Committee meetings are held on the third Friday (from 4:30 to 6:00 p. m.) of each month, and recently some have been combined with the meetings of the committees on neonatal and fetal deaths. These are open meetings, which all committee members, hospital representatives, and involved physicians are specifically invited to attend. Other interested physicians, nurses, students, and social workers are welcomed. (In 1956 the three committees plan to have combined bimonthly meetings, at which time one illustrative case of selected teaching value will be reported from each committee. On alternate months the meetings will be private, at which time controversial cases will be discussed by the committee members only.) Over 90% of the maternal cases are presented by the attending physician, and, in the event that he cannot be present, he has a fellow staff member familiar with the case present it. Occasionally, it is necessary for the chairman to present the case. In any event, after presentation, a discussant from another hospital is called upon to open the discussion. In the event of a serious medical, cardiac, or anesthetic problem the committee invites a competent discussant from that particular specialty; when an autopsy is of special significance, the pathologist presents his findings. Osteopathic physicians also attend the meetings, present their cases, and take part in the activities of the meeting. Although names of involved physicians, patients, and hospitals are not mentioned, it is sometimes evident to those present which hospital and doctor are connected with the case. Voting on classification of a case is limited to members of the committee. They decide whether the death is obstetric or nonobstetric and whether the evident cause is the same as that recorded on the death certificate. If the members feel that the death was preventable, they indicate the relationship of preventable factors to the doctor (P1), the patient (P2), or equal responsibility (P3). A primary avoidable factor is classified in one of the following categories: inadequate prenatal care; ignorance of patient; induction of abortion; error in judgment; or error in technique. If nonpreventable, the death is attributed to intercurrent disease or unavoidable disaster. In the event that a nonobstetric disease (such as heart disease) was the chief cause of death and an error in care was recognized, the death is classified as preventable, nonobstetric.

Follow-Up.—After one year of study, it was apparent to the Committee on Maternal Welfare that some definitive actions could be taken to decrease the loss of lives caused by, or associated with, maternity. Therefore, in 1932, the committee instituted its educational campaign; the members of the Obstetrical Society of Philadelphia were enlisted as speakers, and during the first year their services were offered to 836 lay organizations (social, political, and religious). These physicians were all well qualified to speak on the subject "What Constitutes Adequate Maternity Care?" In 1933 a similar offer was made to 257 women's organizations. Over this two-year period, speakers were provided at meetings for over 70 of such organizations. Also, during this 1932-1933 period, all the ministers of churches in Philadelphia were contacted and urged to include references to the need for adequate maternity care in their Mother's Day programs. A series of 58 articles dealing with various phases of maternal mortality was published in the medical society's weekly publication in 1932-1933. All hospital staff conferences and other clinical societies and affiliates in Philadelphia were informed in detail of the maternal mortality situation and urged to emphasize "Maternal Mortality" before their membership.

TABLE 1.—*Live Births, Philadelphia, Maternal Deaths and Rates per 1,000 Live Births, Philadelphia and the U. S., for Selected Years 1931-1954*

	Philadelphia *			U. S.†		
		Maternal Deaths			Maternal Deaths	
Year	Live Births, No.	No.	Rate/ 1,000 Live Births	No.	Rate/ 1,000 Live Births
1931	33,773	203	6.0	13,965	6.6
1932	32,033	211	6.6	13,129	6.3
1933	29,528	135	4.6	12,883	6.2
1944	38,825	104	2.7	6,369	2.3
1950	47,516	48	1.0	2,960	0.83
1951	50,318	40	0.79	2,812	0.75
1952	51,661	44	0.85	2,610	0.68
1953	51,706	36	0.70	2,385	0.61
1954	53,716	30	0.78	2,140 ‡	0.53 ‡

* Recorded by the Philadelphia Department of Public Health, Office of Statistics and Research.
† National Office of Vital Statistics: Vital Statistics of the United States, Part I, 1949, 1950, 1951, 1952; Monthly Vital Statistics Report, Annual Summary for 1954, Part I (April 15) 1955 and Part II (May 20) 1955; Vital Statistics—Special Reports, Maternal Mortality, Each State and Territory, and Specified Possessions, 1953, (Nov. 23) 1955.
‡ Estimated.

In these many ways, then, the committee presented the maternal mortality situation and methods of prevention to both the profession and the laity. During the years of continued study of maternal deaths, many reports and articles have been published in local medical journals on various aspects of the committee's activities and findings. Recently the committee decided to make transcripts of all case presentations, and discussions pertaining to them, for publication in the county medical journal for the benefit of all the physicians who cannot attend the meetings. After completion of 25 years of continuous operation, a detailed report is now in process of compilation.

In order that the committee's study and analysis of maternal deaths will have a more direct effect, it is the current practice of the committee chairman to send a letter to the attending physician, with copies to the medical director and the chief of obstetrics of his hospital, explaining the decision of the committee in his particular case.

TABLE 2.—*Maternal Deaths, Maternal Welfare Committee and Philadelphia*

	Maternal Welfare Committee *						
	Total Deaths Studied		Obstetric Causes		Non-obstetric Causes		Philadelphia,† Maternal Deaths Tabulated,
Period	No.	%	No.	%	No.	%	No.
1931-1933	717	(100)	639	(89.1)	78	(10.9)	549
1951-1953	140	(100)	107	(76.4)	33	(23.6)	120

* 1. Maternal Mortality in Philadelphia, 1931-1933, Report of the Committee on Maternal Welfare, Philip F. Williams, M.D., Chairman, Philadelphia County Medical Society 1934. 2. Data supplied by Philadelphia Maternal Welfare Committee, 1955.

† Philadelphia Department of Public Health, Office of Statistics and Research.

Results: Statistical Analysis.—In the 24-year period from 1931 through 1954, the maternal mortality had decreased from 203 deaths to 30; in the same period live births have increased from 33,773 to 53,716. Table 1 indicates that the Philadelphia maternal mortality rates through the years have closely approximated the average for the United States. One exception to this is found in 1933—Philadelphia's rate had decreased 30% compared to the national average reduction of only 1.6% for that year (this occurred in the third year of the Maternal Welfare Committee's study).

During the first three years of the study, 1931-1933,[1] a total of 717 deaths were studied and analyzed by the committee (table 2); 639 (89.1%) of these were classified as having been due primarily to obstetric causes. The five leading were as follows (not listed in table 2): septic abortion, 162 (25.3%); puerperal septicemia, 119 (18.6%); albuminuria and eclampsia, 85 (13.3%); accidents of labor, 79 (12.4%); and hemorrhage of pregnancy, 62 (9.7%). Table 3 indicates the committee's findings relative to the five major causes of deaths classified as obstetric in Philadelphia in the 1951-1953 period. It is of interest to note that sepsis is still the leading cause.

TABLE 3.—*Five Major Causes of Maternal Deaths, Classified as Obstetric by the Maternal Welfare Committee**

Cause	1951	1952	1953
Sepsis	11	10	14
Toxemia	10	12	6
Hemorrhage	2	6	5
Heart disease	5	3	2
Anesthesia			
General	2	4	1
Spinal	1	2	0

* Data supplied by Philadelphia Maternal Welfare Committee, 1955.

Table 2 also shows a comparison between the official tabulation by the Philadelphia Department of Public Health Office of Statistics and Research and the refined figures obtained by the thorough studies of the Maternal Welfare Committee. It should be especially noted that the actual maternal mortality rates would have been significantly higher in the early years of the study if the committees figures (mortality due to obstetric causes per 1,000 live births: 7.35, 7.44, and 5.17 for the years 1931, 1932, and 1933 respectively) had been used rather than those recorded by the Office of Statistics and Research. Reasons for this difference are found in the fact that errors on death certificates as to evident causes of death were found in 155 (21.6%) of the 717 cases studied in the 1931-1933 period; different interpretation of the rules of preference of joint causes may have obtained in many cases; and, in addition, the committee included all abortions in its study regardless of cause (officially criminal abortions were coded under homicides and not under maternal deaths). In contrast to the 90 additional deaths (over the official recorded number) that the committee found to have been primarily due to obstetric causes in the 1931-1933 period are the 13 less deaths in the 1951-1953 period, which in their judgment they could not classify as due to obstetric causes consistent with their previous definition of an obstetric death.

TABLE 4.—*Maternal Deaths, Preventability and Responsibility, 1948-1952**

	Preventable			
Year	By Physician	By Patient	Non-preventable	Unclassifiable
1948	13	11	22	3
1949	16	16	15	3
1950	24	15	17	4
1951	16	10	17	2
1952	20	19	16	0
Total	89	71	87	12

* Data supplied by Philadelphia Maternal Welfare Committee, 1955.

It is obvious, then, that the improvement in actual maternal mortality in Philadelphia is considerably better than official statistics indicate.

The chief causes of maternal deaths classified as nonobstetric in the early years of the committee study were pneumonia, tuberculosis, and cardiac disease respectively. In contrast, during recent years only one or two nonobstetric maternal deaths per year have been due to pneumonia and one or two to chronic renal disease; heart disease has been the largest single cause of the nonobstetric maternal deaths.

In classification of maternal deaths (both obstetric and nonobstetric), relative to their theoretical preventability, the committee does not base its decision on the ideal skill and care that might have been given but the criterion required is only that reasonable skill and diligence must have been used in the care of the patient. Of the 717 maternal deaths studied during the first three years, 407 (56.7%) were considered preventable and 310 (43.2%) not preventable. Every factor is weighed carefully in the committee's desire to fairly assign responsibility in each case. Of the 407 preventable deaths, the responsibility was assigned to the physician in 230 (56.5%) and to the patient in 177 (43.5%) deaths. During the five-year

period, 1948-1952, the committee found that a total of 160 maternal deaths were preventable, 87 nonpreventable, and 12 unclassifiable. Table 4 indicates this relationship, and of particular interest is the observation that, of the 160 deaths classified as preventable, 89 (55.6%) were assigned as the responsibility of the physician. This is within one percentage point of those so classified in the first three years of the study.

Included in the committee's evaluation of maternal mortality during its first three years of operation were such factors as age, parity, social status, prenatal care, place of delivery, character of attendant, and type and extent of operative intervention. Results of these evaluations [1] cannot be fully treated here, but brief mention should be made of the committee's finding that only 216 (30%) of the 717 deaths studied had received adequate prenatal care, 193 (27%) had received inadequate, and 297 (41%) had received no prenatal care. In 1931 only 65.7% of the deliveries in Philadelphia occurred in hospitals; by contrast, 98.7% occurred in hospitals in 1953.

Conclusions.—The maternal mortality problem was in the early stages of study when the Committee on Maternal Welfare began an educational campaign designed to make the profession conscious of the progress possible in this area of medical service and the public aware of the need for adequate maternity care. After three years of study and analysis, the committee defined the problem as fourfold [2]: (1) self-induced and criminal abortions; (2) errors of judgment on the part of the medical profession; (3) lack of appreciation of the need of prenatal care by the laity; and (4) failure of hospitals, organized medicine, and allied agencies to grasp fully their responsibilities and opportunities.

With this study, and the resulting picture of the situation, the committee was better prepared to emphasize to the physicians of Philadelphia not only that they must raise their own standards of obstetric practice but that it was their responsibility to ensure education of the lay public in the dangers of induced abortion and the necessity to secure proper antenatal supervision and adequate maternity care. Recommendations were made to all groups, agencies, and institutions concerned with the various aspects of maternal care. Specific obligations were outlined regarding the participation of organized medicine, the obstetric society, the hospitals, the department of public health, the child health society, and others. The pioneering efforts of this committee showed dramatic results during its third year of operation, with a 30% reduction in maternal mortality. Philadelphia's achievement was an example to many other communities and states who desired to begin a similar study and analysis of their own maternal mortality. Tremendous educational potential of this type of study was recognized. Within Philadelphia other committees were established to study neonatal and fetal deaths and those due to anesthetics, rheumatic fever, pelvic cancer, breast cancer, appendicitis, and other causes and their preventive factors.

Although maternal deaths have been greatly reduced during the past 25 years, the work of the committee is by no means over. There are still deaths classified as preventable (62% in the 1948-1952 period), and the theoretical preventability is not based upon ideal conditions but rather upon reasonable care and treatment generally acceptable in the area. Through wider participation in certain of the committee's meetings, through greater dissemination of their findings, and through follow-up letters, the committee is continuing a more concerted educational campaign; in 1956 they are proposing a subcommittee for speakers, in order to inform the public of the present maternal health problems. Further efforts to combat one of the major causes of maternal mortality, those deaths due to hemorrhage, led to the establishment of the Philadelphia Fibrinogen Blood Bank. The committee distributes the fibrinogen for the Americal National Red Cross. It is issued free to any hospital in the Greater Philadelphia Area in which there is a case of hemorrhage with deficient blood fibrinogen. Some 70 such cases have occurred in the last two and one-half years, in most of which the patients have lived because of the distribution of fibrinogen.

In cooperation with the Philadelphia Department of Public Health, the committee is working out new hospital maternity and nursery regulations, and greater use of statistical data is being planned as an aid to proper emphasis on specific maternal problems. The department of public health is studying the needs for additional clinic facilities in areas of the city needing them most. This study will serve to direct future programs. Two subcommittees have been appointed in 1956; one to review legal maternity regulations in order to assist the Philadelphia Department of Public Health and the second to develop a proposed set of rules for courtesy staff doctors on Maternity Service, which might serve as a pattern throughout the United States.

Some of the people most closely associated with and working toward greater improvement of maternal health, and all health in general, in Philadelphia have this to say regarding the leading facet of the Philadelphia program: "The essence of any success these various studies may have had in Philadelphia should be considered. Why has there been such acceptance and participation by the practicing physician? Why have these studies continued to grow and attract interest for more than 20 years? Why have these studies served as a pattern all over the country? Why have similar groups been started here to study the preventable aspects of other deaths, or disease, such as those associated with anesthesia, appendicitis, pelvic cancer, breast cancer, diabetes and rheumatic fever? The energy, honesty, vision, and perseverance of that small initial group of dedicated leaders in the Philadelphia County Medical Society has seemed to establish what is now a precious heritage and tradition. Maintenance of impartiality, objectivity and a desire to learn has avoided many a pitfall were there not such leadership as has been upheld by a fine type of Committee chairmanship and membership."

1. Maternal Mortality in Philadelphia, 1931-1933: Report of Committee on Maternal Welfare, Philip F. Williams, Chairman, Philadelphia County Medical Society, 1934.
2. Footnote 1, p. 127.

MEDICAL NEWS

COLORADO

Course on Management of Diabetes.—A postgraduate course on "The Management of Diabetes" will be presented at the University of Colorado School of Medicine, Denver, May 17-19 with the cosponsorship of the University of Colorado School of Medicine and the Colorado Diabetes Association. The first morning will be devoted to a review of basic physiology, endocrinology, pathology, and diagnosis. Clinical aspects of the disease and its complications will then be presented, with emphasis on management. The final session on Saturday morning will be a live clinic presenting current clinical problems for discussion by the following guest clinicians:

Arthur R. Colwell, chairman, department of medicine, Northwestern University Medical School, Chicago ("The Clinical Course of Diabetes" and "The Therapeutic Applications of Available Insulins").
Henry T. Ricketts, professor of medicine, University of Chicago School of Medicine ("Theories of the Pathogenesis of Degenerative Vascular Complications" and "Initiation and Importance of Diabetic Control").
Howard F. Root, physician-in-chief, New England Deaconess Hospital, Boston ("The Prevention and Management of Diabetic Acidosis" and "Diabetic Triopathy").

Dr. Colwell will speak at a dinner meeting, held jointly by the Colorado Diabetes Association and the Colorado Society of Internal Medicine on Thursday evening. The guest clinicians will participate in a panel discussion Friday evening at a public meeting sponsored by the Lay Society of the Colorado Diabetic Association in Denison Auditorium of the medical school. Information may be obtained by writing to the Office of Postgraduate Medical Education, University of Colorado Medical Center, 4200 E. Ninth Ave., Denver 20.

FLORIDA

Health Forum Panels.—The Dade County Medical Association will sponsor the following forums in the Dade County Auditorium on four successive Tuesdays, beginning May 8: "Heart Disease," "Diabetes," "Female Disorders and Childbirth," and "Health Problems of Senior Citizens."

State Medical Meeting in Miami Beach.—The 82nd annual meeting of the Florida Medical Association will convene at the Hotel Fontainebleau, Miami Beach, May 13-16, under the presidency of Dr. John D. Milton, Miami. At the general session Monday morning Dr. Hunter B. Rogers, Miami, president, Dade County Medical Association, will deliver the address of welcome preceding the introduction of Dr. Elmer Hess, Erie, Pa., President of the American Medical Association. Dr. Shields Warren, Boston, professor of pathology, Harvard Medical School, will address the first scientific assembly at 10 a. m. on "The First Decade of Atomic Medicine." At 11 a. m. Dr. James J. Callahan, professor of bone and joint surgery, Stritch School of Medicine of Loyola University, Chicago, will discuss "Intertrochanteric Fractures and Fractures of the Neck of the Femur." Introduction of Dr. Dwight H. Murray, Napa, Calif., President-Elect of the American Medical Association, will precede the invitational address, "Biliary Tract Surgery," by Dr. John W. Cline, San Francisco, a past-president of the American Medical Association, which will be presented at the second general session Tuesday morning. At 3 p. m. Tuesday "A New Era of Therapy in Psychiatry" will be the topic of Dr. Lauren H. Smith, physician-in-chief and administrator, the Institute, Pennsylvania Hospital, Philadelphia. Various specialty group meetings will be held Saturday and Sunday.

GEORGIA

Meeting of Chest Physicians.—The Georgia chapter of the American College of Chest Physicians will meet at the Biltmore Hotel, Atlanta, May 13-14, in conjunction with the Georgia Trudeau Society, during the meeting of the Medical Association of Georgia. The chapter program Sunday will include:

Aspects of Chest Pathology Affecting Anesthesia, C. Ronald Stephen, Durham, N. C.
Angiocardiography in Diagnosis of Pulmonary Stenosis, Wendell G. Scott, St. Louis.
Indications for Cardiac Surgery, John W. Kirklin, Rochester, Minn.
Use of Antibiotics in Chest Diseases, John H. McClement, New York.

These speakers will participate in a panel discussion, "The Management of Thoracic Diseases During the Surgical Period," moderated by Dr. Thomas P. Findley, Augusta. On Monday Dr. McClement will be the luncheon speaker.

State Medical Meeting in Atlanta.—The 106th annual session of the Medical Association of Georgia will convene May 13-16 in Atlanta. Monday has been designated as "G. P. Day." The general session will be held at the Atlanta Biltmore Hotel, where the following program will be presented at 8:30 a. m.:

Surgical Aspects of Polyps of the Colon, Edward S. Judd, Rochester, Minn.
Diagnosis of Diabetes, Francis D. W. Lukens, Philadelphia.
Mercurial Diuretics in Toxemia of Pregnancy: Use of a New Oral Mercurial Diuretic, Isadore Dyer, New Orleans.
Cancer Prevention in Women, Robert J. Crossen, St. Louis.
Gastrointestinal Allergy in Infancy and Childhood, Jerome Glaser, Rochester, N. Y.

At 11:35 a. m. addresses of welcome will be delivered by Mayor William B. Hartsfield and Dr. McClaren Johnson, Atlanta, president, Fulton County Medical Society. "Your A. M. A.—Some Things to Expect in 1956" will be the topic of Dr. Dwight H. Murray, Napa, Calif., President-Elect of the American Medical Association. At 12:05 p. m. the presidential address will be delivered by Dr. H. Dawson Allen Jr., Milledgeville, president of the state association. The general session will reconvene at 7:30 p. m. with a panel, "Theology and Medicine," which will be moderated by Ralph E. McGill, LL.D., Atlanta, editor, Atlanta *Constitution*. A question and answer period with audience participation will terminate the program after the following presentations by members of the staff of the American Medical Association:

The Physician in Court, George F. Lull, Chicago.
The Physician as a Medical Witness, Mr. C. Joseph Stetler, Chicago.
Demonstration of Expert Medical Testimony, Mr. C. Joseph Stetler, Dr. Ralph E. DeForest, Mr. Edwin J. Holman, and Mr. Richard G. Van Buskirk, Chicago.

A panel, "The Management of Thoracic Diseases During the Surgical Period," has been scheduled for the joint meeting of the sections on diseases of the chest, cardiology, anesthesiology, and radiology Sunday afternoon. The panel will have as participants the authors of the afternoon presentations, which will precede it:

Aspects of Chest Pathology Affecting Anesthesia, C. Ronald Stephen, Durham, N. C.
Angiocardiography and Aortography in Diagnosis of Congenital Malformations of the Heart, Wendell G. Scott, St. Louis.
Indications for Cardiac Surgery, John W. Kirklin, Rochester, Minn.
Use of Antibiotics in Pulmonary Disease, John H. McClement, New York.

The joint session of the sections on pediatrics and eye, ear, nose, and throat will open with "The Child with Frequent Colds," presented in honor of the late Lewie D. Muse by Baker Laboratories. This paper, by Dr. Jerome Glaser, Rochester, N. Y., will be followed by "Secretory Otitis Media—Etiology, Diagnosis, and Treatment" by Dr. Oliver W. Suehs, Austin, Texas, and "Some Neuro-Ophthalmological Syndromes in Childhood" by Dr. Howard A. Naquin, Baltimore. Sunday afternoon the orthopedics section will have as guest speaker Dr. Albert B. Ferguson Jr., Pittsburgh, who will discuss "Etiology and Treatment of Juvenile Round Back." Dr. Ferguson will present "Epiphyseal Line Versus Fracture Line" for the joint meeting on industrial surgery and orthopedics Monday afternoon. Dr. Henry H. Kessler, Newark, N. J., will address this meeting on "Rehabilitation: The New Look in Workmen's Compensation." The house of delegates, meeting Sunday at 5 p. m. in the Academy of Medicine, will hear Major Gen. Silas B. Hays,

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education, and public health. Programs should be received at least three weeks before the date of meeting.

surgeon general, Department of the Army, Washington, D. C., discuss "Military Problems and the Civilian Physician." The urology section, meeting Monday at 2:15 p. m., will have as speaker Dr. Willougby E. Kittredge, New Orleans, whose topic will be "The Perineal Approach to the Prostate." On Tuesday at 2:15 p. m. Dr. Lemuel W. Diggs, Memphis, Tenn., will consider "The Management of Hemorrhagic Disease" before the pathology section. Many of the guest speakers of the general session will talk at various section meetings, to which all physicians are invited.

ILLINOIS

Seminar on Geriatrics.—The Galesburg State Research Hospital, in cosponsorship with the University of Illinois College of Medicine, Chicago, is presenting a seminar on the aging, May 5. During the morning session "The Physiology of Aging" will be considered by Dr. Harold E. Himwich, Galesburg (The Changing Brain Metabolism in Aging), Nathan W. Shock, Ph.D. (Changes in the Renal, Endocrine and Carbohydrate Metabolism with Aging), and Dr. Ernst Simonson, Minneapolis (Cardiovascular and Physical Fitness Changes in Aging). For the afternoon session the topic will be "Clinical Implications of Aging." Dr. Kurt J. Wolff, Osawatomie, Kan., will present "A Definition of the Gerontological Patient"; Dr. Jules H. Masserman, Chicago, "The Psychodynamics of Aging"; Dr. Lionel Z. Cosin, London, England, "Emotional Adjustments in the Elderly"; and Dr. Francis J. Gerty, Chicago, "Psychiatric Complications of the Aging Period."

Chicago

Stillians Lecture.—The sixth Arthur William Stillians Lecture of the Metropolitan Dermatological Society of Chicago will be given at the annual meeting, May 9, by Percy L. Julian, Ph.D., director, the Julian Laboratories, Inc., whose subject will be "Some Intriguing Potentials in Steroid Hormone Researches."

Monthly Cardiac Conference.—The monthly clinicopathologic cardiac conference of Cook County Hospital will be held May 11 at 11 a. m. in the Children's Amphitheater, 700 S. Wood St. "Phonocardiography in Acute Rheumatic Carditis" will be presented by the guest speaker, Dr. Aldo A. Luisada, associate professor of medicine, Chicago Medical School, and director, division of cardiology, Chicago Medical School and Mt. Sinai Hospital.

Davis Memorial Lecture.—The annual D. J. Davis Memorial Lecture on Medical History will be given at 1 p. m., May 9, in room 221 of the Medical-Dental-Pharmacy Building, University of Illinois College of Medicine, 1853 W. Polk St. Carols I. Reed, Ph.D., professor in the department of physiology at the University of Illinois College of Medicine, will have as his subject "John Morgan, Father of the First American Medical School."

Society News.—The Chicago Orthopaedic Society will meet May 11 at the Palmer House (telephone RAndolph 6-7500). After dinner, 6:45 p. m., the following program will be presented at 8 p. m.:

Fracture Dislocations of the Ankle, Allan B. Hirschtick, Chicago.
Palliative Interscapulothoracic Amputation for Recurrent Carcinoma of the Breast, Robert D. Mussey, Urbana, Ill.
Evaluation of Endoprosthesis Hip Arthroplasty, William B. Fischer, Chicago.

Physicians are cordially invited to attend the scientific program.

Symposium on Alcoholism.—The Veterans Administration West Side Hospital (820 S. Damen Ave.) will present a symposium on alcoholism May 9. "Socioeconomic Aspects" will be discussed by Mr. Alvin I. Rose, director, Chicago Department of Welfare; "Psychogenesis" by Dr. Richard S. Cook, medical director, Portal House; "Pathogenesis of Organic Sequelae" by Dr. Hyman J. Zimmerman, chief, medical service; and "Neuropsychiatric Sequelae" by Dr. Vladimir G. Urse, medical director and superintendent of Cook County Psychopathic Hospital. Dinner, 5:45 p. m., in the Hospital Canteen ($1.50, reservations in advance; telephone: TAylor 9-2800, Ext. 670), will be followed by a panel, 7 p. m., on "Management of the Alcoholic," moderated by Dr. Louis E. Halperin, director, psychiatry and neurology services. Telephone during the meeting: TAylor 9-2800, Extension 383.

Course on Diabetes.—A symposium on clinical and public health aspects of diabetes will be held at the Sherman Hotel, May 11 and 12, under the joint sponsorship of the Chicago Diabetes Association, Chicago Board of Health, Illinois Department of Health, and the U. S. Public Health Service. Among the topics for discussion will be degenerative complications of diabetes, the juvenile diabetic, and pregnancy in diabetes. Faculty members will include Dr. Henry T. Ricketts, president, American Diabetes Association; Dr. Arthur R. Colwell, head, department of medicine, Northwestern University Medical School; Dr. Arnold B. Kurlander, chief, Public Health Service Chronic Disease Program; and Dr. Hugh L. C. Wilkerson, director, Diabetes Research Training Center, Boston. The course has been approved by the Illinois Academy of General Practice for category 2 (informal) postgraduate credit. No fees will be charged.

INDIANA

Conference on Exceptional Children.—The spring conference of the Woods Schools of Langhorne, Pa., will be held May 11-12 at the Indiana University Medical Center, Indianapolis, in collaboration with the Indiana University School of Medicine and the division of mental health, state of Indiana. Physicians participating in the program will include Dr. John D. Van Nuys, dean, Indiana University School of Medicine, Indianapolis; Dr. Margaret E. Morgan, Indianapolis, commissioner of the division of mental health, state of Indiana; Dr. J. Cotter Hirschberg, director, Southard School of the Menninger Foundation, Topeka, Kan.; Dr. C. Keith Hepburn, Indianapolis, president, Indiana Neuropsychiatric Association; Dr. William C. Adamson, director, Child Study, Treatment and Research Center of the Woods Schools; Dr. Leonard J. Duhl, National Institute for Mental Health, Bethesda, Md.; Dr. Joseph J. Downing, acting director, Community Mental Health Research Institute, New York state department of mental hygiene, Syracuse, N. Y.; Dr. David H. H. Thomas, superintendent of the Cell Barnes Colony, St. Albans, England; and Dr. John I. Nurnberger, chairman, department of psychiatry, Indiana University School of Medicine. A panel discussion, "The Organization and Development of Research Programs in the Field of Exceptionality," Saturday afternoon, will be followed by a question and answer period.

IOWA

Forum on Heart Disease.—A public medical forum on heart disease will be held at KRNT Theater, Des Moines, May 9, 8 p. m., under the joint sponsorship of the Des Moines *Register and Tribune* and the Polk County Medical Society. Physician participants will include Dr. Walter D. Abbott, Des Moines, president of the society; Dr. Fred Sternagel, West Des Moines, moderator; Drs. John E. Gustafson, George E. Mountain, and Herman J. Smith, Des Moines, panelists; and Drs. Robert I. Burns, James H. Dickens, Earl L. Redfield, and Dennis J. Walter, Des Moines, monitors.

MASSACHUSETTS

Cutter Lecture on Preventive Medicine.—Under the sponsorship of the Harvard School of Public Health, Boston, Dr. James V. Neel, geneticist, Institute of Human Biology, and associate professor of medical genetics, University of Michigan Medical School, Ann Arbor, will deliver the Cutter Lecture on Preventive Medicine, "Human Hemoglobin Types: Their Epidemiological Implications," May 8, 5 p. m., in Amphitheatre D of the Harvard Medical School, 25 Shattuck St., Boston. The medical profession, medical and public health students, and others interested are cordially invited.

MICHIGAN

Phi Delta Epsilon Lecture.—The Alpha Delta chapter of the Phi Delta Epsilon fraternity will hold its eighth annual lecture May 10 at Wayne University College of Medicine Auditorium,

Detroit. The guest speaker, Homer W. Smith, Sc.D., professor of physiology, New York University College of Medicine, will have as his subject: "From Fish to Philosopher."

Alumni Clinic Days.—The Wayne University College of Medicine Alumni Association will observe its Clinic Days and Alumni Reunion May 8-9. The sessions will open Tuesday, 9 a. m., in the medical school auditorium with introductory remarks by Dean Gordon H. Scott, Ph.D., after which Dr. Gordon B. Myers, Detroit, will discuss "Treatment of Refractory Cardiac Failure" and Dr. Charles G. Johnston, Detroit, "Intestinal Obstruction." Ward rounds will be conducted from 10:15 a. m. to 12 noon at the receiving hospital. The following afternoon clinics (1:30-3:30 p. m.) have been scheduled: Medicine, Dr. Muir Clapper, Detroit, moderator (Kresge Auditorium); Surgery, Dr. Duncan A. Cameron, Detroit, moderator (Farwell Annex, 242); and Gynecology, Dr. Charles S. Stevenson, Detroit, moderator (Neuropsychiatric Institute). From 3:40 to 4:45 p. m. in Farwell Annex, 242, Dr. Osborne A. Brines, Detroit, will moderate a clinic on "Acute Conditions of the Abdomen." The following program will be offered on Wednesday at the Hotel Fort Shelby:

A. Carlton Ernstene, Cleveland, Treatment of Coronary Heart Disease.
E. Perry McCullagh, Cleveland, Choice of Treatment of Hypothyroidism.
J. S. Gottlieb, Detroit, Modern Methods in Psychiatric Therapy.
Donald C. Collins, Hollywood, Calif., Technique of Preparing Medical Articles for Publication.
Chevalier L. Jackson, Philadelphia, Diagnosis and Treatment of Carcinoma of the Larynx, Bronchi, and Esophagus.
Orvar Swenson, Boston, Problems in Pediatric Surgery.

A reception, 6:15 p. m., will precede the annual alumni reunion banquet, 7 p. m., at the Hotel Fort Shelby.

MISSISSIPPI

State Medical Meeting in Jackson.—The Mississippi State Medical Association will hold its centennial annual meeting May 8-10 at the Hotel Heidelberg, Jackson, under the presidency of Dr. S. Lamar Bailey, Kosciusko. Dr. Bailey will deliver an address, "Symbol of Service," Monday afternoon at the dedication of the Central Office Headquarters Building (735 Riverside Dr.). The annual meeting will be called to order at 8 p. m. Tuesday by Dr. Onnie P. Myers, Jackson, president of the Central Medical Society. Dr. Bailey's presidential address will be preceded by the Distinguished Service Oration, "Hugh M. Gamble, M.D." by Dr. Howard A. Nelson, Greenwood, and followed by an address by Dr. Elmer A. Hess, Erie, Pa., President of the American Medical Association. Presentations by out-of-state speakers at the scientific sessions will include:

Evaluation of X-Ray Diagnosis in Eye, Ear, Nose, and Throat, Daniel H. Anthony and Daniel F. Fisher, Memphis, Tenn.
Observations on Newer Methods of Preservation of Corneal Tissue, Samuel D. McPherson, Durham, N. C.
Clinical Evaluation of Patients Presenting with Goiter, Mavis P. Kelsey, Houston, Texas.
Complications and Problems Associated with the Management of Ulcerative Colitis, Jacob A. Bargen, Rochester, Minn.
Connective Tissue with Special Reference to the Female, D. Murray Angevine, Madison, Wis.
Obstetric Morbidity and Mortality: Not Medical Care Alone, Robert A. Ross, Chapel Hill, N. C.
Skin Infections as a Source of Acute Nephritis in Children, Clarence H. Webb, Shreveport, La.
Limp Children, David B. Clark, Baltimore.
Tuberculosis and Histoplasmosis, Michael L. Furcolow, Kansas City, Kan.
Virus Infections of the Respiratory Tract, Robert J. Huebner, Bethesda.
The Acute Surgical Abdomen, Arnold S. Jackson, Madison, Wis.
Surgery of the Biliary Tract, Harry L. Claud, Washington, D. C.

A panel, "Therapy in Heart Disease," will be presented by Drs. Joseph P. Melvin, J. Manning Hudson, and William H. Rosenblatt, Jackson, Dr. Ira B. Bright, Greenwood, and Dr. Clifford Tillman, Natchez. The women's auxiliary will hold its annual meeting concurrently.

MONTANA

Medicolegal Institute at Billings.—A Legal-Medical Institute, sponsored by the Montana Bar Association and the Montana Medical Association, scheduled in the Education Building, Eastern Montana College of Education, Billings, May 4-5, is presenting a Symposium on Personal Professional Liability Saturday morning, ending with panel discussion. Saturday afternoon "The Medical Witness" by Mr. C. Joseph Stetler, Chicago, Director, Law Department, American Medical Association, will precede a demonstration on the medical expert witness for which Mr. Stetler will serve as judge and Dr. Ralph E. DeForest, Chicago, Secretary of the A. M. A. Council on Medical Physics, as physician witness. Direct examination and cross examination will be conducted respectively by Mr. R. G. Van Buskirk and Mr. Edwin J. Holman, Chicago, members of the A. M. A. Law Department. Panel discussion and questions on the demonstration will follow. Panel discussion will conclude the sessions after consideration of medical aspects of shock by Dr. Lloyd M. Taylor, Great Falls, and legal aspects by Mr. Lloyd J. Skedd, Helena.

NEW JERSEY

Concert by Doctors' Chorus.—The seventh annual benefit concert of the Doctors' Chorus of the Essex County Medical Society will be given in behalf of the Essex County Service for the Chronically Ill at 6:30 p. m., May 9, in the Mutual Benefit Life Insurance Company Auditorium, 300 Broadway, Newark.

Hospital News.—The Atlantic City Hospital will have as visiting chiefs pro tem. Dr. Monroe J. Romansky, associate professor of medicine, George Washington University School of Medicine, Washington, D. C., May 7-11; Dr. Gerald H. Pratt, associate clinical professor of surgery, New York University College of Medicine, May 14-18; Dr. Wilhelm Raab, professor of experimental medicine, University of Vermont College of Medicine, Burlington, May 21-25; and Dr. William H. Kammerer, assistant professor of clinical medicine, Cornell University Medical College, New York, May 28-June 1.

NEW YORK

Lilienthal Lecture.—At the 16th annual dinner meeting of the New York State chapter, American College of Chest Physicians, at the Hotel Statler, New York City, May 10, Dr. Ethan Flagg Butler, Elmira, will present the sixth annual Howard Lilienthal Lecture, entitled "Howard Lilienthal—Father of Lobectomy."

Annual State Medical Meeting.—The 150th annual meeting of the Medical Society of the State of New York will be held at the Hotel Statler, New York, May 7-11, under the presidency of Dr. Renato J. Azzari, New York. General sessions will be held every afternoon at 2 p. m. The Monday afternoon session will close with "Malpractice Litigation and Prevention" by Mr. Edwin J. Holman, Chicago, Law Department, A. M. A. Wednesday afternoon the A. Walter Suiter Lecture, "Treatment of Cardiac Arrhythmias," will be presented by Dr. Joseph R. DiPalma, Philadelphia, and "Atherosclerosis: Our Present-Day Knowledge" by Dr. Joseph B. Wolffe, Philadelphia. On Thursday afternoon Mr. Kirtland King, Albany, New York state news manager, United Press Association, will talk on "An Editor Surveys Medicine's Public Relations," followed by "Reasons for the High Mortality in Pediatric Anesthesia" by Dr. Robert M. Smith, Boston (by invitation), and "Blood Exchange Clearinghouse Functions, with Special Reference to National Reciprocity Program" by Dr. James J. Griffitts, Miami, Fla. (by invitation). The general sessions will close Friday afternoon with "Use and Abuse of Laboratory Procedures" by Dr. F. William Sunderman, Philadelphia. On Wednesday the section on allergy has scheduled a panel discussion on nasal allergy; the section on general practice, a panel discussion on psychosomatic problems in general practice; the section on dermatology and syphilology, a panel discussion, "Treatment of Cutaneous Malignancies," and a symposium on cutaneous malignancies; and the section on physical medicine will hold live clinics on rehabilitation of children and rehabilitation of the hemiplegic. A session on the history of medicine, Tuesday, 8 p. m., will be open to the public and will present a symposium on the development of medical education in New York City. The session on legal medicine on Wednesday will be held at 9 a. m. The session on public relations Thursday, 9 a. m., will open with "The Doctor in Court" by Mr. C. Joseph Stetler, Chicago (by invitation), Director, Law Department, American Medical Association. His paper will be followed by "Rx for Good PR via Radio" by Mr. Samuel M. Sharkey Jr., New York, editor of news, National Broadcasting

Company; "Public Relations Problems of County Medical Societies" by Mr. Harold N. Howell, Utica, executive secretary, medical societies of the counties of Oneida, Herkimer, and Madison; and "Medicine's Role in Community Activities" presented from the viewpoint of the individual physician and the county medical society by Dr. John F. Rogers, Poughkeepsie, past-president, local Chamber of Commerce, and from the viewpoint of the businessman and the Chamber of Commerce by Mr. Kennerly Woody, New York City, vice-president in charge of public relations, New York Telephone Company and chairman, public relations committee, Chamber of Commerce of the State of New York. Round-table discussion of "Medical and Surgical Treatment of Valvular Heart Disease" is scheduled for Thursday, 8 p. m. Postgraduate lectures on psychiatry in everyday practice will be presented Tuesday at 9 a. m. and miscellaneous postgraduate lectures Wednesday at the same time. The women's auxiliary will meet concurrently.

OHIO

Radiologists Meet in Columbus.—The Ohio State Radiological Society will hold its annual convention at the Deshler-Hilton Hotel in Columbus, May 11-13, under the presidency of Dr. George R. Krause, Cleveland Heights. All Ohio physicians interested are invited to attend. Golf Friday afternoon at the Scioto Country Club will be followed by dinner. The scientific sessions Saturday will open at 9:30 a. m. with "Pericardial Cysts—A Review of 18 Cases" by Dr. Henry C. Blount Jr., Marion, and will close with "Radioactive Isotopes in the Management of Malignant Effusions," with an exhibit demonstration by Dr. Orliss Wildermuth, Ohio State University Hospital, Columbus. A dinner dance is scheduled for 6:30 p. m. On Sunday at 12 noon, Dr. Lee S. Rosenberg, Cincinnati, will moderate a film diagnostic panel.

WASHINGTON

Cancer Symposium at Walla Walla.—A cancer symposium sponsored by the local chapter of the American Cancer Society and the Walla Walla Valley Medical Society will be held at the Elks Temple in Walla Walla May 12. The symposium will begin at 1 p. m., and a paper will be presented following the dinner. Guest speakers for the symposium include: Drs. Ralph H. Loe, Seattle (Tumors of the Breast); Hilding H. Olson, Seattle (Malignant Melanomas); and Dean K. Crystal, Seattle (The Lump in the Thyroid). A paper by a gynecologist, to be announced, will be given on "Malignancies of the GYN Tract." Saturday morning will be devoted to golf at the Walla Walla Country Club.

Meeting on Hematology.—The annual meeting of the Spokane Society of Internal Medicine, May 11-12, will have as its theme "Hematology." Guest speakers include: Dr. Armand J. Quick, department of biochemistry, Marquette University School of Medicine, Milwaukee; Dr. Robert S. Evans, Veterans Administration Hospital, Seattle, and associate professor of medicine, University of Washington School of Medicine, Seattle; and Dr. Clement A. Finch, professor of medicine, University of Washington School of Medicine. The program on Friday will consist of three papers presented by the guests during each morning and afternoon session, followed by a round-table discussion on "Indications for Transfusion," moderated by Dr. Robert A. Stier, Spokane. Dr. Samuel K. McIlvanie, Spokane, will preside at a panel presentation in the auditorium of Sacred Heart Hospital, Spokane, Saturday. A paper, "Thromboembolic Phenomena," will be presented by Dr. Quick at the Friday banquet.

WISCONSIN

Orthopedic Field Clinics.—The Bureau for Handicapped Children, state department of public instruction, announces the following schedule for orthopedic field clinics: Appleton, May 10-11; Fond du Lac, May 16; Chippewa Falls, May 23-24; and Rhinelander, June 5-6. The clinics are conducted for persons under 21 years of age who are referred by their family physician for orthopedic diagnosis and consultation. Forms for referral may be obtained from the Bureau for Handicapped Children, 146 North, State Capitol, Madison 2.

Clinic on Surgical Cardiac Disease.—A postgraduate clinic on surgical cardiac disease will be offered at the Milwaukee County Hospital May 12, 10 a. m. to 12 noon, with Dr. David W. Barrow, professor of surgery, Marquette University School of Medicine, Milwaukee, as moderator. The special guest, Dr. Dwight E. Harken, Boston, will discuss indications for, and results in, the surgery of mitral stenosis and in mitral insufficiency. His operation for the correction of aortic stenosis through an opening in the aorta to which a nylon sleeve has been sutured will be illustrated and discussed. Surgical correction of aortic insufficiency and the use of the heart pump will be discussed.

GENERAL

National Hearing Week.—The 28th annual observance of National Hearing Week (May 6-12) will be sponsored by the American Hearing Society in cooperation with its 111 affiliated chapters "to acquaint the public with the hearing problem, and to promote expansion of services for hard of hearing children and adults."

Meeting on Rehabilitation of Cleft Palate.—At the 14th annual meeting in the Hotel Muehlebach, Kansas City, Mo., May 3-5, the American Association for Cleft Palate Rehabilitation offered short courses on "Growth and Development of the Head in Patients with Cleft Lip and Cleft Palate" and "The Speech Pathology of the Cleft Palate Patient." The sessions included team presentation on a cleft palate by faculty members and chairmen of their respective departments at the University of Kansas City School of Dentistry or the University of Kansas School of Medicine and a panel discussion, "The Problem of the Premaxilla in Bilateral Cleft Lip and Palate."

Meeting in Nassau.—A tour following the annual clinical session in Boston took some members of the American Medical Association to Nassau in the Bahamas, where a combined meeting was held. Dr. Kenneth J. Eardley of the Bahamas Medical Association gave the welcoming address at the Princess Margaret Hospital, where an inspection tour was made later. Visiting members of the A. M. A. included Drs. Jack H. Persinger, Washington C. H., Ohio; William B. Chase, Des Moines; Carrol H. Verovitz, Cleveland; Florens E. Bollaert, East Moline, Ill.; John B. Laughrey, Sutersville, Pa.; Howard C. Leopold, Philadelphia; Lester L. Zipser and Richard S. Hodes, Tampa, Fla.; Samuel Allentuck and Saul Solomon, New York City; S. David Miller, New Brunswick, N. J.; and Clinton A. Roath, Los Angeles.

Meeting on Thoracic Surgery.—The American Association for Thoracic Surgery will hold its 36th annual meeting May 7-9 at the Hotel Fontainebleau, Miami Beach, Fla., under the presidency of Dr. Richard H. Meade, Grand Rapids, Mich. A symposium on anesthesia and related problems has been scheduled for Monday afternoon and a thoracic surgical forum for Tuesday morning. The presidential address, "Some of the Forgotten Men in the Field of Thoracic Surgery," Tuesday, at 3 p. m., will be followed by the address of the honored guest, Philip Allison, Ch.M., F.R.C.S., Nuffield Professor of Surgery, Oxford, England, on "Observations on a Conservative Approach to Nonmalignant Lesions of the Cardia." Tuesday, 7 p. m., there will be cocktails, a banquet, and dancing. Attendance is limited to members and invited speakers and their ladies. Dinner dress preferred.

Trudeau Course on Tuberculosis.—The Trudeau School of Tuberculosis, Saranac Lake, N. Y., will present its 41st annual session June 4-29. The course (fee $100) will cover all aspects of pulmonary tuberculosis and also certain phases of other chronic chest diseases. The clinical material for the course will be derived from the Ray Brook (N. Y.) State Tuberculosis Hospital, the Tupper Lake Veterans Facility, Will Rogers Memorial, and Sanatorium Gabriels. Members of the research laboratories, practicing tuberculosis specialists of Saranac Lake, and guest lecturers from various parts of the country will participate in the program. The Trudeau School of Tuberculosis has been approved for training of veterans under public laws. Those desiring to obtain veterans' benefits should clear their

registration with the Veterans Administration before the session begins. For information and registration, please write: Secretary, Trudeau School, 7 Church St., Saranac Lake, N. Y.

Grants-in-Aid for Leukemia Research.—The Leukemia Society, Inc., formerly the Robert Roesler de Villiers Foundation, established to encourage research in leukemia, will award grants-in-aid to support research projects on leukemia for the year 1956-1957. Grants offered in 1956 will take into consideration requests covering more than one year. Renewal of grants at the termination of the initial period will also be considered. Applications may be made throughout the year. To be reviewed at the meetings of the selection committee on June 1 and Sept. 1, 1956, and March 1, 1957, they should be received not later than May 15 and Aug. 15, 1956, and Feb. 15, 1957. The society will also accept applications for fellowships for studies in the field of leukemia and allied diseases to be given during the year 1956-1957, to be awarded on the dates of these meetings. Qualified investigators are encouraged to apply to: Leukemia Society, Inc., 67 Wall St., New York 5.

Conference on Cancer.—The American Cancer Society and the National Cancer Institute of the Public Health Service will jointly sponsor the third National Cancer Conference in Detroit, June 4-6. More than a thousand research scientists and clinicians, including many from foreign countries, are expected to attend. The opening session, in the Sheraton-Cadillac Hotel, will feature addresses by Dr. John R. Heller, director, National Cancer Institute, Bethesda, Md., and Dr. Charles S. Cameron, scientific director, American Cancer Society, New York City. Morning and afternoon sessions will begin with a general session at which a subject of broad interest will be presented by an outstanding speaker. The general sessions will then break into various symposiums to discuss cancer of various body sites. A host committee representing medical and health groups of the Detroit area, headed by Dr. Harry M. Nelson, Detroit, of the southeastern Michigan division, American Cancer Society, will arrange a public Cancer Forum for Tuesday evening. The last National Cancer Conference was held in Cincinnati in 1952.

Wellcome Medal and Prize.—Competition for the Sir Henry Wellcome medal and prize ($500) is open to all medical department officers, or former such officers, of the Army, Navy, Air Force, Public Health Service, Veterans Administration, National Guard, and the reserves of the United States, commissioned officers of foreign military service, and all members of the Association of Military Surgeons. No person will be eligible for a second award, and no paper previously published will be accepted. Each competitor must send six copies of his paper (3,000-10,000 words), identified only by a nom de plume or distinctive device, to the Secretary of the Association of Military Surgeons of the United States, Suite 718, 1726 Eye St. Northwest, Washington 6, D. C. Each entry must be accompanied by a sealed envelope marked on the outside with the fictitious name or device assumed by the writer and enclosing his true name, title, and address. Competition closes July 1, 1956. The winning essay or report will be published in *Military Medicine*.

Society News.—The **International College of Surgeons** is accepting reservations for the banquet for the 21st annual congress of its Canadian and United States section in the Grand Ball Room of the Palmer House in Chicago, Sept. 12, at which the guest speaker will be Mrs. Eleanor Roosevelt. Tickets for the banquet and reception will be $15 each. Reservation requests, accompanied by check payable to Dr. Chester W. Trowbridge, banquet chairman, should be sent to him at 715 Lake St., Oak Park, Ill.——At its 60th annual meeting in New York, May 7-11, the **Association of Food and Drug Officials of the United States** will honor the 50th anniversary of the Pure Food and Drugs Act and Meat Inspection Act of 1906. Gov. W. Averill Harriman will deliver a commemorative address Thursday afternoon in honor of the late Dr. Harvey W. Wiley, "father" of the pure food and drug acts, and the first Harvey W. Wiley award for meritorious service on the part of a control official will be presented. A feature of the week's events will be an exhibition at the New York Historical Society, 170 Central Park West, recalling the methods of manufacture and sale of food and drugs before the passage of the protective laws. A grocery store and a pharmacy of the period will be on view as well as equipment, utensils, containers, posters, advertisements, and labels of the time. Speakers at the conference will include Dr. Leona Baumgartner, commissioner, New York City Board of Health.

Meetings on Pediatrics.—The American Pediatric Society will hold its annual meeting May 6-11 at The Inn, Buck Hill Falls, Pa., under the presidency of Dr. Allan M. Butler, Boston, who will deliver the presidential address at 8:30 p. m. Wednesday. In all, 27 papers will be presented and 40 will be read by title. Papers to be presented by invitation will include "The Specific Enzymatic Defect in Galactosemia," "Rheumatic Pneumonia," "Unusual Aspects of Congenital Aganglionic Intestine with Review of the Pathological and Embryological Correlation," "The Influence of Blood Group Incompatibility, Sex, Birth Weight and Birth Order upon Serum Bilirubin Levels in a Newborn Population," "ACTH: An Adjunct to Exchange Transfusion Therapy in Erythroblastosis Fetalis," and "Aortic Stenosis in Children."——The Society for Pediatric Research will hold its meeting at The Inn May 7-8. Invitational addresses at this conference will include: "The Occurrence of Anemia of the Newborn in Association with the Appearance of Fetal Hemoglobin in the Maternal Circulation," "Electron Microscopy of Newborn Infant Lungs (Preliminary Report)," "The Pattern of Response of Pulmonary and Systemic Arterial Pressures in Newborn and Older Infants to Short Periods of Hypoxia," "Study of a Child with Sporadic Hypothyroidism Associated with a Goiter," "An Experimentally Developed Rationale for Vaccination of Children Against Influenza," and "Steatorrhea Related to a Factor in Cow's Milk."

Postgraduate Courses Not Previously Published.—Notification of the following courses has recently been received:

A graduate educational program in the **biological sciences basic to medicine,** which will open Sept. 15 at the State University of New York's Medical Center in Brooklyn, will admit candidates for the degree of doctor of philosophy and initially will offer programs in anatomy, biochemistry, pharmacology, and physiology. The program is being set up to prepare men to assume leadership in teaching and research. Students cannot be enrolled in the medical and graduate programs at the same time. Tuition is $200 a year, and several teaching assistantships are available for those seeking financial aid.

The summer laboratory course in techniques and applications of the **electron microscope** will be given at the college of engineering, Cornell University, Ithaca, N. Y., June 11-23, by the Laboratory of Electron Microscopy in the department of engineering physics. The course is designed to give members an intensive survey of basic theory and interpretation of results. The registration is limited to a small group. Inquiries should be addressed to Benjamin M. Siegel, Ph.D., Department of Engineering Physics, Rockefeller Hall, Cornell University, Ithaca, N. Y.

The second postgraduate course in **esophageal speech and organic voice problems,** sponsored by the University of Miami School of Medicine, Coral Gables, Fla., will be presented June 18-30 under the direction of Dr. Nathaniel M. Levin and staff. The class will be limited to 30 (otolaryngologists, surgeons, rehabilitation specialists, and speech therapists). Traineeships valued at $250 each are available to qualified individuals on application to Homer F. Marsh, Ph.D., dean, University of Miami School of Medicine, 1100 Anastasia Ave., Coral Gables, Fla.

The San Francisco Academy of General Practice is sponsoring a six-week postgraduate course in **medicine** at Fort Riley Veterans Administration Hospital, Tuesdays, 8-10 p.m. The course, which began April 24, is moderated by Dr. Forrest M. Willett, chief of medicine at the hospital and associate professor of medicine, Stanford University School of Medicine, Stanford University-San Francisco. All physicians, residents, and interns are invited. Attendance will give 12 units in category 1 for all members of the Academy of General Practice.

Meeting of American Otological Society.—The 89th annual meeting of the American Otological Society, Inc., will be held May 11-12 at the Seigniory Club, Montebello, Province of Quebec, Canada. The presidential address by Dr. William J. McNally, Montreal, will introduce the following symposium on the utricle:

Microscopic Structure of the Utricle, Catherine A. Smith, Ph.D., St. Louis (by invitation).

The Question of Cortical Representation of the Labyrinth, Wilder G. Penfield, Montreal (by invitation).

Importance of the Otolithic Organs in Man Based upon a Specific Test for Utricular Function, Ashton Graybiel, U.S.N. (by invitation).

(A) Postural Vertigo Due to Partial Destruction of the Vestibular Nerve and (B) Summary of the Symposium, John R. Lindsay, Chicago.

"Autoradiographic Studies of the Intimate Structures of the Inner Ear" will be presented by Dr. Leonard-F. Belanger, Ottawa

(by invitation), and "Analogy Between Cochlear Fluid Motion and Formation of Surf on Sloping Beaches (Film Presentation)" by Dr. Juergen Tonndorf (by invitation). The president's reception will precede the annual dinner at 7 p. m., at which the guest speaker will be David L. Thomson, Ph.D., dean of the Faculty of Graduate Studies and Research, and vice-principal, McGill University. The dinner (dress optional) is for members, officially invited guests, and their ladies. The guest of honor, Stacy R. Guild, Ph.D., Baltimore, will speak on hearing, Saturday morning, after which "Some Recent Experiments on the Neurophysiology of Hearing" will be presented by Dr. Robert Galambos, Washington, D. C. (by invitation). The Saturday session will conclude with "The Structure of Bone and Cartilage," an invitational address by Dr. Robert A. Robinson. On Saturday afternoon, 2 p. m., "Functional Repair of the Middle Ear in Chronic Otitis Media" will be considered by Prof. Dr. H. Wullstein, Wurzburg, Germany (by invitation).

FOREIGN

Meeting on Infectious Pathology.—The first International Congress of Infectious Pathology will convene in the Faculty of Medicine and Pharmacy, 8 Avenue Rockefeller, Lyon, France, May 24-26. The subjects for discussion will include (1) viral neuroinfections and (2) collagen diseases in infections. A symposium on rabies has been scheduled.

Congress on Fertility and Sterility.—The second World Congress on Fertility and Sterility will be sponsored by the International Fertility Association at the Angioino Castle in Naples, Italy, May 18-26. The major topics of the congress will include: endocrine and metabolic factors in fertility and sterility; professional (occupational) and toxic factors in relation with fertility; new methods of diagnosis and treatment of male sterility and of female sterility; diagnosis and treatment of ovulation and of spermatogenesis; surgery of male sterility and of female sterility; and experimental investigations in fertility and sterility. The registration fee of $25 includes the volume of the proceedings of the congress.

EXAMINATIONS AND LICENSURE

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Various Centers. June 19-20 (Parts I and II); September 4-5 (Part I). Candidates may file applications at any time but they must be received at least six weeks before the date of the examination for which application is made. New candidates should apply by formal registration; registered candidates may notify the board, indicating desired location, date and candidate number. Ex. Sec., Dr. John P. Hubbard, 133 South 36th St., Philadelphia 4.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination* Montgomery, June 19-21. Sec., Dr. D G Gill, State Office Bldg., Montgomery.

ARKANSAS:* *Examination.* Little Rock, June 14-15. Sec., Dr. Joe Verser, Harrisburg.

COLORADO:* *Examination.* Denver, June 12-13. Exec. Sec., Miss Beulah H. Hudgens, 831 Republic Bldg., Denver 2.

DELAWARE: *Examination.* Dover, July 10-12. *Reciprocity.* Dover, July 19. Sec., Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA:* *Examination.* Washington, May 14-15. Deputy Director, Mr. Paul Foley, 1740 Massachusetts Ave., N.W., Washington.

FLORIDA:* *Examination.* Miami Beach, June 24-26. Sec., Dr. Homer L. Pearson, 901 N.W. 17th St., Miami 36.

GEORGIA: *Examination and Reciprocity.* Atlanta, June. Sec., Mr. Cecil L. Clifton, 111 State Capitol, Atlanta 3.

IDAHO: *Examination, Reciprocity and Endorsement.* Boise, July 9-11. Exec. Sec., Mr. Armand L. Bird, 364 Sonna Bldg., Boise.

ILLINOIS: *Examination and Reciprocity.* Chicago, June 19-21 and Oct. 9-11. Supt. of Regis., Mr. Frederic B. Selcke, Capitol Building, Springfield.

INDIANA: *Examination.* Indianapolis, June. Exec. Sec., Miss Ruth V. Kirk, 538 K. of P. Bldg., Indianapolis.

IOWA:* *Examination.* Iowa City, June 11-13. Exec. Sec., Mr. Ronald V. Saf, 310 Bankers Trust Bldg., Des Moines.

KANSAS: *Examination and Reciprocity.* Kansas City, June 6-7. Sec., Dr. Lyle F. Schmaus, 872 New Brotherhood Bldg., Kansas City.

KENTUCKY: *Examination.* Louisville, June 4-6. Sec., Dr. Russell E. Teague, 620 S. Third St., Louisville 2.

LOUISIANA: *Regular. Examination and Reciprocity.* New Orleans, June 5-7. Dr. E. H. Lawson, 930 Hibernia Bank Bldg., New Orleans. *Homeopathic.* Subject to call. Sec., Dr. F. H. Hardenstein, 903 Pere Marquette Bldg., New Orleans 12.

MAINE: *Examination and Reciprocity.* Augusta, July 10-11. Sec., Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Examination.* Baltimore, June 19-22. Sec., Dr. Lewis P. Gundry, 1211 Cathedral St., Baltimore.

MARYLAND: *Homeopathic. Examination.* Havre de Grace, June 25-27. Sec., Dr. Robert H. Reddick, R.D. #2, Cambridge.

MASSACHUSETTS: *Examination.* Boston, July 10-13. Sec., Dr. Robert C. Cochrane, Room 37, State House, Boston.

MICHIGAN:* *Examination.* Ann Arbor and Detroit, June 11-13. Sec., Dr. E. C. Swanson, 118 Stevens T. Mason Bldg., Lansing.

MINNESOTA:* *Examination and Reciprocity.* Minneapolis, June 12-14. Sec., Dr. F. H. Magney, 230 Lowry Medical Arts Bldg., St. Paul 2.

MISSISSIPPI: *Examination.* Jackson, June 25-26. *Reciprocity.* Jackson, June 27. Asst. Sec., Dr. R. N. Whitfield, Old Capitol, Jackson.

MISSOURI: *Examination.* St. Louis, May 30-31 and June 4-5. Exec. Sec., Mr. John A. Hailey, State Capitol Bldg., Box 4, Jefferson City.

NEBRASKA:* *Examination.* Omaha, June 18-20. Director, Bureau of Examining Boards, Mr. Husted K. Watson, 1009 State Capitol Bldg., Lincoln.

NEW JERSEY: *Examination.* Trenton, June 19-22. Sec., Dr. Patrick H. Corrigan, 28 W. State St., Trenton.

NEW MEXICO:* *Examination and Endorsement.* Santa Fe, May 21-22. Sec., Dr. R. C. Derbyshire, 227 E. Palace Ave., Santa Fe.

NORTH CAROLINA: *Examination.* Raleigh, June 18-21. Sec., Dr. Joseph J. Combs, Professional Bldg., Raleigh.

NORTH DAKOTA: *Examination.* Grand Forks, July 11-13. *Reciprocity and Endorsement.* Grand Forks, July 14. Sec., Dr. C. J. Glaspel, Grafton.

OHIO: *Examination.* Columbus, June 14-16. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA:* *Examination.* Oklahoma City, June 5-6. Sec., Dr. E. F. Lester, 813 Braniff Bldg., Oklahoma City.

PENNSYLVANIA: *Examination.* Philadelphia and Pittsburgh, July 9-12. Acting Sec., Mrs. Margaret G. Steiner, Box 911, Harrisburg.

SOUTH CAROLINA: *Examination.* Columbia, June 25-26. Sec., Mr. N. B. Heyward, 1329 Blanding St., Columbia.

SOUTH DAKOTA:* *Examination.* Custer, July 17-19. Sec., Mr. John C. Foster, 300 First National Bank Bldg., Sioux Falls.

TEXAS:* *Examination and Reciprocity.* Fort Worth, June 18-20. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Fort Worth 2.

UTAH: *Examination.* Salt Lake City, July 11-13. Director, Mr. Frank E. Lees, 324 State Capitol Bldg., Salt Lake City 1.

VIRGINIA: *Reciprocity.* Richmond, June 13. *Examination.* Richmond, June 14-16. Address, Board of Medical Examiners, 631 First St., S.W., Roanoke.

WASHINGTON:* *Endorsement.* Seattle, July 15. *Examination.* Seattle, July 16-18. Sec., Mr. Edward C. Dohm, Olympia.

WEST VIRGINIA: *Examination.* Charleston, July. Reciprocity. Sec., Dr. N. H. Dyer, State Office Bldg. No. 3, Charleston.

WISCONSIN:* *Reciprocity,* Madison, Spring; *Reciprocity and Examination,* Milwaukee, July 10-12. Sec., Dr. Thomas W. Tormey, Jr., 1140 State Office Bldg., Madison.

WYOMING: *Examination and Reciprocity.* Cheyenne, June 4. Sec., Dr. Franklin D. Yoder, State Office Bldg., Cheyenne.

ALASKA:* On application in Anchorage, Fairbanks, Juneau and other towns. Sec., Dr. W. M. Whitehead, 172 South Franklin St., Juneau.

HAWAII: *Examination.* Honolulu, July 9-10. Sec., Dr. I. L. Tilden, 1020 Kapiolani St., Honolulu.

VIRGIN ISLANDS: *Examination and Endorsement.* Charlotte Amalie, June 13-14. Sec., Dr. Earle M. Rice, St. Thomas.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

FLORIDA: *Examination.* Miami, June 9. Sec., Mr. M. W. Emmel, Box 340, Gainesville.

OREGON: *Examination.* Portland, June 2, Sept. 8 and Dec. 1. Dr. Earl M. Pallett, Sec., State Board of Higher Education, Eugene.

SOUTH DAKOTA: *Examination.* Vermillion, June 8-9. Sec., Dr. Gregg M. Evans, 310 E. 15th St., Yankton.

WASHINGTON: *Reciprocity.* Seattle, July 10. *Examination.* Seattle, July 11-12. Sec., Mr. Edward C. Dohm, Olympia.

WISCONSIN: *Examination.* Milwaukee, June 2. Final date for filing application was Mar. 30. Madison, Sept. 21. Final date for filing application is Sept. 13. Sec., Dr. W. H. Barber, 621 Ransom St., Ripon.

ALASKA: *Examination and Reciprocity.* Anchorage and Juneau, first week of February, April, June, August and November. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

*Basic Science Certificate required.

GOVERNMENT SERVICES

NAVY

Radioisotope Center Established in Egypt.—The surgeon general recently announced that a complete radioisotope laboratory has been established at Cairo, Egypt. In support of the "Atoms for Peace" program, established by the President, the radioisotope laboratory is to be used for medical treatment of the Egyptian people. Staffed by United States-trained Egyptian scientists, the laboratory was preassembled at the National Naval Medical Center, Bethesda, Md., and placed in operation prior to transfer to Cairo.

In November, 1954, at the request of the Egyptian ambassador and through arrangements with the United States government and the Bureau of Medicine and Surgery, Lieut. William Boyd Looney, M. C., U. S. N. R., went to Cairo to aid in initiating the program and train Egyptian scientists in the use of radioisotopes.

Four Egyptian scientists soon arrived in Washington, D. C., for training at the National Naval Medical Center. Further training was continued at Oak Ridge, Tenn.; National Institutes of Health, Bethesda, Md.; Brookhaven National Laboratory, Long Island, New York; and Harvard Medical School, Boston. They returned to the National Naval Medical Center, where they preassembled and operated for several weeks the radioisotope laboratory that was to be relocated in Egypt.

After the transfer to Cairo, the first patient was treated at the radioisotope center on July 25, 1955. Under the terms of the "Atoms for Peace" program and a three-year agreement with the Egyptian government, it is expected that 15 or more Egyptian scientists will be trained at the National Naval Medical Center and at various laboratories throughout the United States.

During the training of the first group of Egyptian scientists, Lieut. Robert A. Dudley, then attached to the biophysics section of the Atomic Energy Commission, contributed to the training by establishing methods for the control of radioisotopes and the protection of personnel engaged in their use. After leaving the Navy, he was employed by the Egyptian Research Council for which he is now a consultant.

In 1955, Capt. Elmer R. King, M. C., assistant chief of radiology, Bethesda Naval Hospital, was designated as technical advisor to the Egyptian "Atoms for Peace" program. Captain King and Lieutenant Looney are now visiting the center in Cairo, where they will continue to furnish assistance as required.

VETERANS ADMINISTRATION

Changes in Hospital Managers.—Dr. Horace D. Smith, director of professional services at the Veterans Administration hospital in Long Beach, Calif., has been appointed manager of the VA hospital at Omaha, succeeding Dr. Clifford C. Woods, who recently was transferred as manager of the VA hospital at Memphis, Tenn. The reassignment of hospital managers transfers Dr. Warren L. Fleck, presently manager of the VA hospital at Fort Howard, Md., to the VA hospital at Dwight, Ill., as manager; and Dr. Daniel R. Robinson, presently manager at Dwight, to Fort Howard as manager.

Dr. Roderick G. St. Pierre, psychiatrist at the VA hospital in Palo Alto, Calif., was appointed manager of the Roseburg, Ore., hospital to succeed Dr. George L. Wadsworth, who resigned last December.

Dr. Lester Drubin, director of professional services at the VA hospital in Northport, L. I., was appointed manager of the Jefferson Barracks hospital to succeed Dr. Joseph B. Bounds, who was transferred to the VA hospital in Roanoke, Va.

Dr. Harry G. Hockett, director of professional services, at the VA hospital in Marion, Ind., has been appointed manager of the hospital, which has 1,650 beds for neuropsychiatric patients, succeeding Dr. Arvin E. Trollinger, who was transferred as manager of the VA hospital in Lyons, N. J.

Dr. Clifford C. Woods, manager of the Veterans Administration hospital in Omaha, has been reassigned as manager of the VA hospital at Park Avenue and Getwell Street in Memphis, Tenn., succeeding Dr. Hugh L. Prather who has retired because of disability.

PUBLIC HEALTH SERVICE

Poliomyelitis Vaccine Released.—As of April 9, a total of 45,512,832 cc. of poliomyelitis vaccine had been released by the Public Health Service. States and territories have been allotted 31,215,681 cc. for distribution through public agencies and commercial channels. The National Foundation for Infantile Paralysis has had 13,723,179 cc. reserved for its program of free vaccinations of second and third-grade children. Vaccine for shipment abroad under approved licenses totals 11,232 cc. to date, and 562,740 cc. went into commercial channels before controls were established.

MISCELLANEOUS

New Pavilion for Saint Elizabeth's Hospital.—The new 6-million-dollar Dorothea Lynde Dix Pavilion of Saint Elizabeth's Hospital, Washington, D. C., was formally dedicated April 13. Marion B. Folsom, Secretary of Health, Education, and Welfare, of which department Saint Elizabeth's is a component, described the new facilities as "a symbol of progress in the psychiatric world generally, and as providing for a major advancement in the care and treatment of the mentally ill, in which Saint Elizabeth's has been the leader since its beginnings in 1855."

The 10-story building is named for Dorothea Lynde Dix as a memorial to her contribution to professional and public understanding of the need for humane care of the mentally ill. From 1841 until her death in 1887, she worked to improve their lot, and it was through her efforts that Saint Elizabeth's Hospital was established. The new pavilion, which provides 420 beds with one, two, or four-patient rooms, will be operated as a receiving and intensive treatment center with therapeutic and rehabilitative facilities and personnel.

New Dorothea Lynde Dix Pavilion of Saint Elizabeth's Hospital.

Dr. Winfred Overholser, superintendent of Saint Elizabeth's, sees the new building as "an important new step in carrying out the principles that have guided the work of Saint Elizabeth's for a century; one that will assist in breaking down the psychological wall between the hospital and the community."

The dedication ceremony was open to the public. Vice-President Nixon gave the address. Invited guests were members of the Cabinet, senators and congressmen, federal and district officials, governors of the states in which Miss Dix was active in her humanitarian campaign, and leading figures in psychiatric and other medical, nursing, and social welfare fields.

DEATHS

Bartlett, Charles Joseph, New Haven, Conn.; born in Sutton, Vt., in 1864; Yale University School of Medicine, New Haven, 1895; an associate member, and in 1925 member of the House of Delegates, of the American Medical Association; past-president of the Connecticut State Medical Society, New Haven Medical Association, Connecticut Association of Public Health and Clinical Laboratories, and the Connecticut Medical Examining Board; instructor from 1895 to 1897, assistant professor from 1897 to 1900, and full professor of pathology at his alma mater from 1900 until he became emeritus professor in 1917; specialist certified by the American Board of Pathology; fellow of the American College of Physicians; member of the Connecticut Association of Arts and Sciences, Sigma Xi, Phi Beta Kappa, American Association for the Advancement of Science, American Association of Pathologists and Bacteriologists, and the College of American Pathologists; in 1937 retired as a commissioner of the New Haven Board of Health, a position he held since 1913; for 10 years medical examiner for the city of New Haven; served as pathologist to the Charlotte Hungerford Hospital in Torrington, Meriden (Conn.) Hospital, Griffin Hospital in Derby, and Grace Hospital; pathologist to the New Haven Hospital from 1900 to 1917; past-president of the New Haven Civic Federation; in the volume entitled "The Heritage of Connecticut Medicine," contributed a chapter on medical licensure in Connecticut; died March 6, aged 91, of peritonitis.

Cunniffe, Edward R. ⊕ New York City; born in Port Jervis, N. J., April 18, 1882; Cornell University Medical College, New York City, 1903; member from 1936 to 1954 and chairman from 1944 to 1954 of the Judicial Council of the American Medical Association, serving as a member of its House of Delegates in 1929, from 1932 through 1936, and from 1938 to 1944; founder and first president of the Bronx chapter and fellow of the American College of Surgeons, which on Nov. 17, 1955, awarded him its gold medallion; past-president of the Medical Society of the State of New York, and chairman of its board of trustees for a number of years; past-president of the Bronx County Medical Society and Bronx Surgical Society; for many years taught at Fordham University School of Medicine; in 1915 joined the Fordham Hospital surgical staff, serving for many years as director of surgery, and in 1946 retired to become consulting surgeon; in 1948 appointed consulting thoracic surgeon of Seton Hospital; consulting surgeon, St. Joseph's Hospital in Yonkers, Holy Name Hospital in Teaneck, N. J., Morrisania Hospital, St. Elizabeth's Hospital, and the Union Hospital, where he died March 12, aged 73, of metastatic carcinoma of the liver, lungs, and cerebellum and carcinoma of the colon.

Lawrence, Edwin Alonzo ⊕ Indianapolis; born in Monroeville, Ohio, May 22, 1910; Western Reserve University School of Medicine, Cleveland, 1935; specialist certified by the American Board of Surgery; founder-member of the American Board of Thoracic Surgery; professor of surgery (cancer coordinator) at the Indiana University School of Medicine; formerly on the faculty of the Yale University School of Medicine in New Haven, Conn., and the University of Utah School of Medicine, Salt Lake City; on the staff of the Indiana University Medical Center and the Robert W. Long Hospital; served as consultant surgeon at the Veterans Administration Hospital in Grand Junction, Colo.; at one time associated with the New Haven (Conn.) Hospital, the Holy Cross and Salt Lake General hospitals in Salt Lake City, and the Utah State Tuberculosis Sanatorium in Ogden; member of the Society of University Surgeons and the American Association for Cancer Research; fellow of the American College of Surgeons; the cancer issue of the *Journal of the Indiana State Medical Association* for April, 1956, was dedicated to him; died in the Robert W. Long Hospital Feb. 20, aged 45, of cancer.

Beeuwkes, Henry, St. Petersburg, Fla.; born in Jamesburg, N. J., Aug. 29, 1881; Johns Hopkins University School of Medicine, Baltimore, 1906; fellow of the American College of Surgeons; entered the U. S. Army in 1909 and resigned in 1924; served during World War I; later medical director of the American Relief Administration to Russia, serving under Herbert Hoover; for many years director of the West African Yellow Fever Commission, organized by the Rockefeller Foundation; at one time assistant professor of medicine at Cornell University Medical College in New York City; during World War II commanding officer of the Valley Forge General Hospital in Phoenixville, Pa.; awarded the Hoff Memorial medal of the U. S. Army in 1910; received the French Legion of Honor in 1919, Grand Medaille Epidémie, France, 1927, Mary Kingsley medal of Liverpool in 1934, and the Distinguished Service medal and Legion of Merit of the U. S. Army; died in the Veterans Administration Hospital in Bay Pines Jan. 31, aged 74, of cerebral thrombosis and arteriosclerosis.

Bailie, Effie Deane Worley, Berkeley, Calif.; Cooper Medical College, San Francisco, 1888; at one time a medical missionary in China; served on the staff of the Children's Hospital in San Francisco; died Feb. 10, aged 90, of heart disease.

Baker, William Monroe ⊕ St. Louis; Marion-Sims-Beaumont Medical College, St. Louis, 1902; died Jan. 13, aged 84, of cerebral hemorrhage and arteriosclerotic heart disease.

Beitsch, William Frederick ⊕ Beaver Falls, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1905; member of the Radiological Society of North America; died Dec. 4, aged 75, of coronary occlusion and hypertension.

Bell, Raymond Gernand, St. Petersburg, Fla.; Tufts College Medical School, Boston, 1917; an associate member of the American Medical Association; member of the Medical Society of the State of New York; veteran of World War I; formerly medical examiner for the department of labor in the state of New York; died in Mound Park Hospital Feb. 3, aged 63, of a heart attack.

Benedict, Mary Kendrick, Glenside, Pa.; Johns Hopkins University School of Medicine, Baltimore, 1919; member of the Massachusetts Medical Society; formerly dean of students and resident physician at the Connecticut College in New London, Conn.; president emeritus of Sweet Briar (Va.) College; died Feb. 10, aged 81, of a heart attack.

Bland, John Perry, Adrian, Mich.; the Hahnemann Medical College and Hospital, Chicago, 1901; served during World War I; on the staff of the Bixby Hospital in Adrian, where he died Jan. 9, aged 80, of heart disease.

Bloom, Charles Joseph ⊕ Muskegon, Mich.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1908; fellow of the American College of Surgeons; served as a member of the staffs of the Mercy Hospital and of the Hackley Hospital, where he died Feb. 19, aged 73, of acute leukemia and bronchopneumonia.

Boso, Fred M. ⊕ San Antonio, Texas; St. Louis University School of Medicine, 1907; member of the American Heart Association; served as physician for the police and fire departments; medical director of the Tulsa (Okla.) Hospital from 1914 to 1930; on the honorary staff of Santa Rosa Hospital; died Feb. 24, aged 74, of pyelonephritis.

Boucher, Georges Alphonse ⊕ Brockton, Mass.; Laval University Faculty of Medicine, Quebec, Canada, 1890; died in Concord, N. H., Jan. 9, aged 90.

Brandt, George Carl, Los Angeles; Northwestern University Medical School, Chicago, 1905; on the staffs of the California Hospital, French Hospital, and the Hollywood Presbyterian Hospital, where he died Feb. 23, aged 80, of peritonitis, perforated diverticulum of the colon, and arteriosclerotic heart disease.

Brumer, Herbert B., St. Petersburg, Fla.; the Hahnemann Medical College and Hospital, Chicago, 1919; member of the Iowa State Medical Society; died in St. Augustine Jan. 21, aged 62, of acute coronary occlusion.

⊕ Indicates Member of the American Medical Association.

Budnick, Thomas Jacob ✠ East Troy, Wis.; Marquette University School of Medicine, Milwaukee, 1951; served during World War II; formerly a resident at St. Michael's Hospital in Milwaukee; interned at St. Mary's Hospital in Milwaukee, where he died Feb. 22, aged 31, of burns suffered when leaking natural gas exploded after he lit a cigarette.

Burrell, Edmund Clay ✠ Bethel, Vt.; University of Vermont College of Medicine, Burlington, 1909; served as health officer; died Feb. 8, aged 69, of a heart attack.

Campbell, Kleber Alexander ✠ Hopedale, Mass.; Albany (N. Y.) Medical College, 1900; died in the Fairlawn Hospital, Worcester, Jan. 30, aged 82, of coronary disease.

Camper, Harry Greene ✠ Welch, W. Va.; Baltimore Medical College, 1912; past-president of the McDowell County Medical Society, West Virginia Public Health Council, and the Norfolk and Western Railway Physicians and Surgeons Association; for many years health officer of McDowell County; one of the founders and on the staff of the Stevens Clinic Hospital; died Feb. 17, aged 69, of coronary occlusion.

Capuano, Giacinto, Camden, N. J.; Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1901; served on the staff of the Cooper Hospital; died Feb. 4, aged 85, of heart disease.

Chatard, Joseph Albert ✠ Baltimore; Johns Hopkins University School of Medicine, Baltimore, 1903; past-president and secretary of the Medical and Chirurgical Faculty of Maryland; served during World War I; formerly on the faculty of his alma mater; on the board of the Bon Secours Hospital; died in the Johns Hopkins Hospital Jan. 27, aged 76, of acute leukemia.

Crawford, James Breckenridge, Little Rock, Ark.; College of Physicians and Surgeons, Little Rock, 1910; assistant clinical professor of surgery (oto-rhino-laryngology) at the University of Arkansas School of Medicine; member of the Arkansas Medical Society; member of the staffs of St. Vincent's Infirmary and the Arkansas Baptist Hospital; a consultant staff member of the Missouri Pacific and the Arkansas State hospitals; died Feb. 22, aged 70, of carcinoma of the lung.

Davis, James Abraham, Winter Garden, Fla.; Atlanta (Ga.) School of Medicine, 1906; died in Pine Castle Jan. 14, aged 80, of cerebral hemorrhage.

Davis, William Joseph Leo, Scranton, Pa.; Columbia University College of Physicians and Surgeons, New York City, 1896; an associate member of the American Medical Association; served during World War I; formerly associated with the Veterans Administration; died Feb. 18, aged 80.

Davis, William McCay ✠ St. Petersburg, Fla.; Jefferson Medical College of Philadelphia, 1902; past-president of the Pinellas County Medical Society; served as city physician; for many terms served as chief of staff of Mound Park Hospital; on the staff of St. Anthony's Hospital, where he died Feb. 8, aged 78, of acute posterior myocardial infarction.

Decker, James Wynn Isaac, Atlanta, Texas (licensed in Texas under the Act of 1907); died Feb. 14, aged 79, of a heart attack.

Dell, Augustus John ✠ Middletown, Ohio; Miami Medical College, Cincinnati, 1901; city physician; served on the staffs of Mercy Hospital in Hamilton and the Middletown Hospital; died in Muncie, Ind., Feb. 2, aged 78, of pulmonary emphysema and fibrosis.

Delscamp, William Henry, Dayton, Ohio; Medical College of Ohio, Cincinnati, 1900; served on the staffs of the Miami Valley and St. Elizabeth hospitals; died Feb. 26, aged 85, of heart disease.

Dickson, William Harrison, Ann Arbor, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1911; served as county coroner; died Feb. 7, aged 73.

Douglas, Volney D. ✠ Carleton, Neb.; Lincoln (Neb.) Medical College of Cotner University, 1907; surgeon for the Union Pacific Railroad; a staff member of the Lutheran Hospital in Beatrice and the Thayer County Memorial Hospital in Hebron; died in Omaha Feb. 23, aged 77, of arteriosclerosis.

Dunkley, James H. ✠ Roanoke, Va.; College of Physicians and Surgeons, Baltimore, 1892; retired medical director of the Shenandoah Life Insurance Company; on the staff of the Shenandoah Hospital; died in Staunton Feb. 6, aged 86, of strangulated hernia.

Enos, Clinton, Denver; the Hahnemann Medical College and Hospital, Chicago, 1891; an associate member of the American Medical Association; died Feb. 2, aged 88.

Falconer-Slater, Katherine Ellen ✠ Ypsilanti, Mich.; Cornell University Medical College, New York City, 1933; member of the Medical Society of New Jersey; served a residency at the University Hospital in Ann Arbor, Mich.; died in Winter Haven, Fla., Feb. 17, aged 49, of hypertensive cardiovascular disease.

Feldstein, Zama, New York City; University of the City of New York Medical Department, New York City, 1895; died Feb. 11, aged 83, of massive gastric hemorrhage.

Fenstermacher, Clark H., Sargent, Neb.; University of Louisville (Ky.) Medical Department, 1900; served as mayor; died in St. Mary's Hospital, Nebraska City, Feb. 6, aged 83, of myocarditis and arteriosclerosis.

Finn, Edward James, Shelton, Conn.; Yale University School of Medicine, New Haven, 1910; member of the Connecticut State Medical Society; health officer; served as mayor and on the board of education; for many years on the staff of St. Vincent's Hospital in Bridgeport and Griffin Hospital in Derby, where he died Feb. 20, aged 69, of subdural hemorrhage.

Flood, Henry Clement ✠ Pittsburgh; University of Pittsburgh School of Medicine, 1910; specialist certified by the American Board of Pediatrics; member of the American Academy of Pediatrics; past-president of the Pittsburgh Academy of Medicine; formerly on the faculty of his alma mater; served in France during World War I; on the staffs of the Children's and St. Margaret's hospitals; head of the pediatrics department of the Western Pennsylvania Hospital, where he died Feb. 4, aged 70.

Forsley, Edward Thomas ✠ Lenox, Mass.; Tufts College Medical School, Boston, 1933; member of the International College of Surgeons; served during World War II; chief of surgery, St. Luke's Hospital in Pittsfield, where he died Feb. 3, aged 47, of subendocardial infarction.

Good, Roland Haven ✠ Van Wert, Ohio; Ohio State University College of Medicine, Columbus, 1925; interned, Mount Carmel Hospital in Columbus; past-president of the Van Wert County Medical Society; member of the Ohio State Surgical Association; served during World War II; Van Wert County chairman of the American Medical Education Foundation; past-president of the staff of the Van Wert County Hospital; past-president of the Van Wert Rotary Club; died Jan. 24, aged 55, of coronary thrombosis.

Graves, Stanley Hope ✠ Norfolk, Va.; Medical College of Virginia, Richmond, 1894; fellow of the American College of Surgeons; honorary member and past-president of the Norfolk County Medical Society; at one time member of the state board of health; served during World War I; on the staff of the Leigh Memorial Hospital, where he died Feb. 2, aged 83, of arteriosclerotic heart disease.

Gwynn, George Humphrey ✠ Tallahassee, Fla.; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1916; served during World War I; on the staff of the Tallahassee Memorial Hospital; died Jan. 28, aged 63, of cancer of the lungs.

Hamilton, Frank Andrew, Boston; Harvard Medical School, Boston, 1906; member of the Massachusetts Medical Society; served on the faculty of his alma mater; died in the Peter Bent Brigham Hospital Feb. 12, aged 76, of a heart attack.

Hayes, Charles Howard, Pittsburgh; University of Pennsylvania Department of Medicine, Philadelphia, 1896; supervisor of school medical inspectors; died in the Mayview (Pa.) State Hospital Feb. 4, aged 84, of cerebral arteriosclerosis.

Hewett, Arthur James, Newburyport, Mass.; Chicago College of Medicine and Surgery, 1912; member of the Massachusetts Medical Society; for many years chairman of the board of health; on the staff of the Worcester Memorial Hospital; died in the Salem (Mass.) Hospital Feb. 25, aged 69, of heart disease.

Hodges, Frank Carlton ✠ Abilene, Texas; University of Texas School of Medicine, Galveston, 1929; specialist certified by the American Board of Orthopaedic Surgery; served during World War II; member of the American Academy of Orthopaedic Surgeons; fellow of the American College of Surgeons; on the staff of St. Ann's Hospital and of the Hendrick Memorial Hospital, where he died Feb. 14, aged 49, of subarachnoid hemorrhage.

Holbrook, Howell Parks, Jr. ✠ Tucker, Ga.; University of Georgia School of Medicine, Augusta, 1947; interned at the Baroness Erlanger Hospital in Chattanooga, Tenn.; formerly an officer in the U. S. Air Force; died Jan. 14, aged 32, of a heart attack.

Hollenbeck, Lloyd Louis ✠ Brooklyn, N. Y.; Medical College of Virginia, Richmond, 1915; on the staffs of the Brooklyn, Caledonian, and Swedish hospitals; served as director and vice-president of the Midwood Hospital; died Feb. 7, aged 65, of lymphosarcoma.

Huppert, Alois, New York City; Medizinische Fakultät der Universität, Vienna, Austria, 1919; died Jan. 4, aged 64.

Irwin, Millard Holloway, Nokomis, Ill.; University of Louisville (Ky.) Medical Department, 1910; died in St. Francis Hospital, Litchfield, Jan. 28, aged 68, of cancer of the prostate.

Jamison, Benjamin Lewis, Washington, D. C.; Medical College of Virginia, Richmond, 1947; member of the Medical Society of the District of Columbia; interned at the University Hospital in Baltimore; on the staff of St. Elizabeths Hospital, where he served a residency; died Feb. 9, aged 33.

Janney, James Craik ✠ Tryon, N. C.; Harvard Medical School, Boston, 1915; specialist certified by the American Board of Obstetrics and Gynecology; member of the Massachusetts Medical Society; fellow of the American College of Surgeons; served as president of the American Physicians Literary Guild; formerly practiced in Boston, where he was on the staff of the Faulkner Hospital; died Jan. 7, aged 66, of coronary thrombosis.

Johnson, Stephen Patrick, Encino, Calif.; University of Illinois College of Medicine, Chicago, 1934; served on the staffs of the California Lutheran and Queen of Angels hospitals in Los Angeles; died in Tarzana Jan. 29, aged 47.

Jones, John Paul ✠ Dill City, Okla. (licensed in Oklahoma by years of practice); died Jan. 9, aged 89.

Jones, William Clark ✠ Mobile, Ala.; University of Alabama Medical Department, Mobile, 1907; died in the Providence Hospital Dec. 31, aged 76, of arteriosclerosis.

Karr, Harlan Eugene ✠ Greenville, N. H.; University of Vermont College of Medicine, Burlington, 1934; interned at the Lynn (Mass.) Hospital; later served with the Essex Sanatorium in Middleton, Mass.; for many years served on the school board; health officer; a trustee of the public library and the Mason Village Bank; staff member of the Monadnock Community Hospital in Peterborough, where he died Jan. 31, aged 48, of cirrhosis of the liver and chronic lymphatic leukemia.

Kelley, Thomas Joseph ✠ Santa Cruz, Calif.; St. Louis University School of Medicine, 1941; interned at the Sacramento County Hospital in Sacramento; formerly a resident at the Veterans Administration Hospital in San Francisco; served during World War II; died Jan. 17, aged 39, of acute seropurulent pericarditis and coronary thrombosis with infarction.

Kenney, Harry Thomas ✠ Watertown, S. D.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; veteran of the Spanish-American War; served in the Mexican Border campaign of 1916; a medical officer during World War I; medical examiner for the Selective Service System; in 1921 state senator from Hughes and Sully counties; on the staff of the St. Ann Hospital and Memorial Hospital, where he died Jan. 28, aged 73, of hypostatic pneumonia and malignant lymphoma.

King, Oran West ✠ Des Moines, Iowa; Northwestern University Medical School, Chicago, 1903; member of the American Urological Association; served during World War I; formerly on the staff of the Iowa Methodist Hospital, Mercy Hospital, and Iowa Lutheran Hospital, where he died Feb. 7, aged 80, of arteriosclerosis.

Kingsley, Sumner Butler Banks, Ithaca, N. Y.; Columbia University College of Physicians and Surgeons, New York City, 1896; died Jan. 20, aged 88, of arteriosclerosis.

Lakeman, Charles Shebbeare ✠ Rochester, N. Y.; University of Buffalo School of Medicine, 1923; past-president of the Monroe County Medical Society; member of the Rochester Pathological Society and the Rochester Academy of Medicine; member of the medical grievance committee of the state society; associate chief of surgery and past-president of the medical board at the Rochester General Hospital; died Feb. 19, aged 58, of heart disease.

Le Mar, Clair Leone, Osceola, Neb.; University of Nebraska College of Medicine, Omaha, 1903; died Jan. 22, aged 83, of injuries received when the automobile in which he was driving was struck by a truck.

Leslie, Charles Thomas ✠ Pittsfield, Mass.; Columbia University College of Physicians and Surgeons, New York City, 1905; past-president and treasurer of the Berkshire District Medical Society; past-member of the Massachusetts State Council; consultant in obstetrics at St. Luke's Hospital, where he was chief of staff in 1941; consultant in obstetrics and gynecology at the Pittsfield General Hospital; served as a member of the staff of the Hillcrest Hospital; died Feb. 9, aged 75, of metastatic adenocarcinoma of the liver.

LeVan, George Francis, Philadelphia; Medico-Chirurgical College of Philadelphia, 1894; an associate member of the American Medical Association; died Feb. 16, aged 87.

Levy, Emanuel ✠ Oak Park, Ill.; Jenner Medical College, Chicago, 1914; served during World War I; retired from the Veterans Administration in September, 1949; died in the Oak Park Hospital March 3, aged 69, of arteriosclerotic heart disease.

Lichter, Theodore William ✠ Edgewood, Iowa; State University of Iowa College of Medicine, Iowa City, 1928; interned at St. Louis City Hospital; bank president; died in Cedar Rapids Jan. 30, aged 55, of posterior coronary occlusion.

Lommen, Clarence Edgar ✠ Fordville, N. D.; Minneapolis College of Physicians and Surgeons, 1909; died Feb. 21, aged 72, of postmyocardial infarction.

Lowinger, Ernest A., Chicago; Illinois Medical College, Chicago, 1909; for many years chief of the bureau of vital statistics in the city health department; died in Miami Beach, Fla., March 4, aged 71, of acute myocardial infarction.

Lucas, James Walter ✠ Moorhead, Miss.; University of the South Medical Department, Sewanee, Tenn., 1897; past-president of the Delta Medical Society; formerly councilor of the First District of the Mississippi State Medical Association; retired surgeon for the Illinois Central Railroad; died in Jackson Dec. 29, aged 84, of coronary thrombosis.

Lynch, Daniel Lawrence ✠ Boston; Tufts College Medical School, Boston, 1907; member of the Industrial Medical Association, of which he was past-president; fellow of the American College of Surgeons; retired medical director of the New England Telephone and Telegraph Company; died Feb. 13, aged 72, of pulmonary edema and arteriosclerotic heart disease.

McCall, Otis M. Sheridan, Wheaton, Mo.; Barnes Medical College, St. Louis, 1895; served during World War I; president of the Bank of Wheaton; died in the Cardell Hospital, Stella, Jan. 29, aged 85, of nephritis and angina pectoris.

McClellan, R. Reyburn ✠ Xenia, Ohio; Harvard Medical School, Boston, 1919; fellow of the American College of Surgeons; surgical staff member, Greene Memorial Hospital; president, McClellan Hospital, where he died Feb. 3, aged 64, of coronary artery disease.

MacIvor, Angus ✠ Marysville, Ohio; Starling Medical College, Columbus, 1904; past-president of the state board of health; joined the Ohio National Guard in 1911 and was called to the Mexican Border in 1916; served overseas during World War I; on the staffs of the Memorial Hospital in Marysville, Grant Hospital and Mount Carmel Hospital, Columbus, where he died Feb. 11, aged 79, of coronary thrombosis.

McVay, Edward Anthony ✠ Newark, N. J.; University of Arkansas School of Medicine, Little Rock, 1925; director of St. James Hospital, where he was a staff member for many years; died in Miami, Fla., Feb. 23, aged 59.

Mankell, Nathalie Kavaleff, Buffalo; University of Buffalo School of Medicine, 1911; served on the staff of the Buffalo General Hospital; died in the North Broward General Hospital, Fort Lauderdale, Fla., Jan. 9, aged 91, of chronic pyelonephritis, diabetes mellitus, and arteriosclerosis.

Monks, John Peabody ✠ Lincoln, Mass.; Harvard Medical School, Boston, 1928; certified by the National Board of Medical Examiners; served during World War II; instructor in medicine at his alma mater; since 1946 physician with research and administrative duties in the department of hygiene (student health) at Harvard University in Cambridge; assistant physician at the Massachusetts General Hospital; died March 3, aged 54, of carcinoma of the colon.

Morrow, Clarence Stanley ✠ Columbia, Tenn.; Vanderbilt University School of Medicine, Nashville, 1950; interned at the Strong Memorial Hospital in Rochester, N. Y.; served as physician for the U. S. Steel Company in Gary, W. Va.; died Feb. 21, aged 31, of cancer.

Mroz, Rudolph John ✠ Rockford, Ill.; University of Illinois College of Medicine, Chicago, 1922; specialist certified by the American Board of Orthopaedic Surgery; member of the Clinical Orthopaedic Society and the American Academy of Orthopaedic Surgeons; on the staffs of St. Anthony's and Winnebago County hospitals; died in the Wesley Memorial Hospital in Chicago March 16, aged 58.

Neistadt, Charles Simon, Baltimore; University of Maryland School of Medicine, Baltimore, 1913; died in the George Washington University Hospital in Washington, D. C., Jan. 11, aged 64, of myocardial infarction and arteriosclerotic heart disease.

Normandeau, Florence Julia Verecunda, Schenectady, N. Y.; Chicago College of Medicine and Surgery, 1912; died in St. Clare's Hospital Feb. 2, aged 76, of aplastic anemia.

Northcross, Daisy L., Detroit; Bennett Medical College, Chicago, 1913; died in the Providence Hospital Jan. 10, aged 75, of intestinal obstruction and postoperative adhesions.

Palmer, Raymond Arthur, Toledo, Ohio; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1910; died Feb. 12, aged 71, of hypertensive cardiovascular disease.

Peterson, Ruben Emanuel Axel, Swissvale, Pa.; Hahnemann Medical College and Hospital, Philadelphia, 1916; served overseas during World War I; died Dec. 31, aged 61, of myocardial infarction and arteriosclerosis.

Platner, Roy Eldredge ✠ Liverpool, N. Y.; Syracuse University College of Medicine, 1910; member of the Syracuse Academy of Medicine; for many years health officer for the town of Salina; senior anesthetist at Crouse-Irving Hospital in Syracuse; died Feb. 12, aged 71, of coronary disease.

Pope, Andrew Jackson ✠ La Feria, Texas; University of the South Medical Department, Sewanee, Tenn., 1904; died in Harlingen Dec. 16, aged 87, of coronary thrombosis.

Price, Frederick Joseph, Syracuse, N. Y.; Syracuse University College of Medicine, 1943; member of the Medical Society of the State of New York; served in the Medical Corps, Army of the United States; staff member of St. Joseph Hospital; died in the Veterans Administration Hospital Feb. 20, aged 37, of glioblastoma multiforme.

Ramser, Harold Alfred ✠ Chicago; Rush Medical College, Chicago, 1916; served during World War I; on the staffs of Chicago Eye, Ear, Nose and Throat Hospital, St. Elizabeth Hospital, and St. Vincent's Infants and Maternity Hospital; died in Mexico City March 11, aged 65, of coronary thrombosis.

Ratliffe, Joseph Wilson ✠ Anderson, S. C.; Emory University (Ga.) School of Medicine, 1918; served during World War I; on the staff of the Anderson Memorial Hospital, where he died Jan. 31, aged 60, of acute myocardial infarction.

Reed, William Henry, Kingsport, Tenn.; Medical College of Virginia, Richmond, 1913; member of the Tennessee State Medical Association; fellow of the American College of Surgeons; charter member of the medical staff of Holston Valley Community Hospital, where he died Jan. 13, aged 73, of coronary and cerebral thrombosis and pneumonia.

Righter, Frank Paine, Nantucket, Mass.; Western Pennsylvania Medical College, Pittsburgh, 1907; died Jan. 5, aged 72, of heart disease.

Robbins, John Edward ✠ Wilmington, Del.; Hahnemann Medical College and Hospital of Philadelphia, 1930; member of the American Academy of General Practice; died Feb. 23, aged 51, of coronary disease.

Rogers, Oscar Leslie ✠ Sandersville, Ga.; University of Maryland School of Medicine, Baltimore, 1897; for many years county health commissioner; senior surgeon at Rawlings Sanitarium, where he died Jan. 9, aged 81, of congestive heart disease and pneumonitis.

Seawright, Robert Mayes ✠ Bolton, Miss.; Emory University (Ga.) School of Medicine, 1934; member of the American Academy of General Practice; secretary-treasurer of the Mississippi Academy of General Practice; past-president of the board of trustees of Bolton schools; president of the Bolton Rotary Club; on the staffs of St. Dominic's Hospital and the Baptist Hospital in Jackson, where he died Feb. 8, aged 45, of cerebral hemorrhage.

Shapiro, Max E. ✠ Brooklyn, N. Y.; Long Island College Hospital, Brooklyn, 1920; on the staff of the Maimonides Hospital; died Dec. 25, aged 61, of heart disease.

Streeter, John Frank, Springfield, Mass.; University of Pennsylvania Department of Medicine, Philadelphia, 1905; died in the Holyoke Soldiers Home Feb. 5, aged 78, of bronchopneumonia and arteriosclerotic heart disease.

Truesdell, Ernest Z. ✠ Bethune, S. C.; Medical College of the State of South Carolina, Charleston, 1911; served on the staff of the Camden (S. C.) Hospital; died Feb. 14, aged 77, of arteriosclerotic heart disease.

Tyler, George Platt, Sr., Ripley, Ohio; Medical College of Ohio, Cincinnati, 1886; served as mayor of Manchester; at one time county coroner and member of the Ripley Board of Public Affairs; died Feb. 6, aged 91, of coronary thrombosis.

Valenti-Mestre, Antonio ✠ New York City; Universidad Central de Espana Facultad de Medicina, Madrid, Spain, 1922; consultant physician at the Fitkin Memorial Hospital in Neptune, N. J., Doctors Hospital, and Midtown Hospital; gastroenterologist consultant at Harkness Pavilion of Columbia-Presbyterian Medical Center; died in the Doctors Hospital Feb. 23, aged 56, of bronchogenic carcinoma.

Van Aelstyn, Edward Leslie ✠ Vancouver, Wash.; University of Louisville (Ky.) School of Medicine, 1934; specialist certified by the American Board of Preventive Medicine; member of the American Trudeau Society; health officer for the Clark-Skamania Health District; formerly Cowlitz-Wahkiakum District health officer; died in St. Joseph Hospital Feb. 12, aged 48.

Wallace, Charles Stuart, Holdenville, Okla.; Central Medical College of St. Joseph, Mo., 1905; University of Maryland School of Medicine, Baltimore, 1911; for many years superintendent of public health; on the staff of St. Francis Hospital and the Physicians and Surgeons Hospital, where he died Feb. 13, aged 72 ,of cerebral hemorrhage.

Weingart, William Frederick ✠ Milwaukee; Chicago College of Medicine and Surgery, 1911; on the staff of the Evangelical Deaconess Hospital; died Feb. 7, aged 82, of cerebral thrombosis.

Wiltrout, Irving George, Oslo, Minn.; Wisconsin College of Physicians and Surgeons, Milwaukee, 1911; an associate member of the American Medical Association; served as mayor, area health officer, and as president of the board of education; veteran of World War I; medical advisor of the draft board; during World War II medical officer of the Marshall County Draft Board; died Feb. 1, aged 70, of congestive heart disease.

FOREIGN LETTERS

AUSTRIA

Repeated Embolectomy.—At the meeting of the Society of Physicians in Vienna on Feb. 3, Dr. F. Heinzmann presented a 54-year-old woman, who nine months earlier had undergone three embolectomies in the course of one week, the first for embolism of the left femoral artery, the second for a riding embolus of the aorta and embolism of both the iliac arteries, and the third for embolism of the right femoral artery. The patient had been admitted to a medical ward because of a post-endocarditic mitral defect of 10 years' duration associated with fibrillation and decompensation. On May 10, 1953, she was transferred to a surgical ward for the first embolectomy. The postoperative course was normal. Six days later a massive riding embolus of the aorta caused pallor and cyanotic discoloration of the skin of the lower half of the body from the toes to the umbilicus. The aorta was exposed retroperitoneally from a left-sided pararectal incision. The inferior 4 cm. of the aorta, 4 cm. of the right common iliac artery, and 10 cm. of the left iliac artery were completely occluded by emboli. The left common iliac artery was incised, and an embolus was removed. Normal bilateral pulsation of the femoral arteries resulted from this procedure, but recovery of the right leg did not occur. Within seven hours the third embolectomy was performed on the right femoral artery. The postoperative course was normal, and blood perfusion of the patient's legs had remained normal. The immediate results of most embolectomies are satisfactory, but recurrences are frequent and usually are fatal or require amputation.

Toxicity of Streptomycin.—At the meeting of the Society of Physicians in Vienna on Feb. 17, Dr. J. Hein of Tönsheide reported on a series of 229 patients with pulmonary tuberculosis who were treated with Streptothenat (a preparation of streptomycin and pantothenic acid) and Didrothenat (a preparation of dihydrostreptomycin and pantothenic acid). Doses of 1 gm. were alternated with doses of 2 gm. daily. Ototoxic damage was determined by audiometric and caloric tests. In contrast to the findings of Hinshaw and Heck, who did not observe any ototoxic reactions of patients to streptomycin and dihydrostreptomycin combined but found vestibular lesions in 18% of the patients treated with streptomycin alone and cochlear lesions in 15% and vestibular lesions in 6% of patients treated with dihydrostreptomycin alone, the speaker did not find any such lesions in patients treated with Didrothenat, although he used larger daily doses and the same total dose. Damage occurred only with total doses of more than 200 gm. in two patients. Treatment with Streptothenat in doses of 1 gm. alternating with 2 gm. per day was hardly superior to treatment with streptomycin sulfate. Concerning effectiveness, allergic manifestations, and development of resistance, there was not much difference between the sulfate and the pantothenate preparations.

Hyperestrinism.—At the meeting of the Austrian Society of Gynecologists and Obstetricians in Vienna in February, Dr. A. Rockenschaub stated that the term hyperestrinism is vague, because there is no definite proof of an excessive influence of estrogens. A differentiation between absolute and relative hyperestrinism cannot be made because most patients with the signs of absolute hyperestrinism show symptoms of relative hyperestrinism, and vice versa. Hyperplasia of the endometrium, which is considered the classic proof of hyperestrinism, is also a sign of ovarian insufficiency and therefore of estrogen deficiency. The characteristic tension complaints are likewise manifestations of ovarian deficiency.

Bleeding Esophageal Varices.—At the meeting of the Society of Physicians in Vienna on Feb. 24, Dr. E. Wodak stated that esophageal varices should be treated in cirrhotic patients before a severe hemorrhage occurs. Roentgenographic findings alone are not sufficient for an incontestable diagnosis, which can be made only by endoscopy. After control of the acute hemorrhage with the aid of balloon-sound tamponade, the speaker injects up to 1 cc. of Kainon (a 9.5% solution of iodine) above the varicose nodes. With this sclerosing injection it is possible to reduce the number and the severity of the hemorrhages. Complete thrombosis of the dilated vessels is not desirable, because this leads to the development of varices in adjacent areas. An endoscopic examination should be made on all patients suspected of having varices. If varices are found, sclerosing injections should be given as a prophylactic measure.

Cutaneous Tuberculosis.—At the same meeting, Dr. C. P. Funk of Regensburg stated that isoniazid is the drug of choice for the treatment of cutaneous tuberculosis. In the treatment of lupus vulgaris, total excisions according to Lang's technique can be performed under the protective cover of isoniazid with much less risk than before. By the combined use of drugs the development of resistant organisms may be delayed but not prevented.

BELGIUM

Danger from Pesticides.—The Superior Council of Public Health issued a statement calling attention to the dangers from pesticides, or, more specifically, phosphorus compounds, hydrocyanic acid and its derivatives, nicotine, arsenic, products containing mercury, and chlorated hydrocarbides. These products are used to combat diseases affecting man and domestic animals, to combat plant parasites, to improve crop yields, and to preserve stored foods. Thus, they constitute a necessary evil, but measures are needed to reduce the danger of acute, subacute, or chronic poisoning caused by fortuitous, criminal, or occupational accidents involving them. There is also a danger from residual amounts remaining in foodstuffs. In rural communities the physician should warn the population of these dangers. Although he cannot always prevent acute accidents, and though therapy of chronic intoxication must be symptomatic, the physician can always give first aid in an emergency, send the patient to a hospital, and provide the hospital personnel with information about the offending agent and the treatment already given.

Toxic pesticides should be distributed only by responsible persons who can help the physician by informing him on the nature of each product and the antidote to be used. A program designed to eliminate toxic residua in foods includes: (1) strict regulation of use according to season and locality; (2) toxicologic studies on animals of at least three different species and, if possible, of three successive generations; (3) education of users of the products by the distributors; and (4) establishment of the maximal allowable concentrations of certain products by adequately equipped health laboratories. These problems extend to all substances added to foods.

Medical Care.—After several months of discussion, an agreement was reached between the Belgian government and the medical profession concerning the proposed reforms in sickness-disability insurance. Physicians are to give preferential rates to persons with an annual income of 100,000 francs or less. The relations of physicians and insurance companies will not be under governmental control; this assures the patient free choice of a physician and the physician free choice to adhere or not to the system of institutionalized medicine. The control function will be taken over by physicians appointed by the insurance firms. At the head of this body will be a supreme council of eight physicians representing the insurance societies, eight physicians from professional societies, and eight university professors appointed by the state. The physicians connected with the mutual societies will determine the criteria of invalidity.

The items in these letters are contributed by regular correspondents in the various foreign countries.

CHILE

Rheumatic Fever.—Dr. S. Vaisman, in the August, 1955, issue of *Revista médica de Chile*, reported on a series of 1,000 school children with rheumatic fever observed over a period of 17 years. In only 726 of these was the author able to establish the time of the onset of the disease, and the average age at the onset was 9½ years. In two-thirds of the patients the onset ranged from 6½ to 13 years. In only 511 cases was there definite information regarding the presence or absence of rheumatic fever in the father, mother, or siblings, and this was positive in 20% of the cases. Few families had more than two cases of rheumatic disease. As to seasonal distribution of outbreaks of rheumatic fever, in only 499 cases was the time of onset obtained with certainty; the greatest frequency was in June and July (winter). The incidence was high also in March, May, October, and December. Thus, in Santiago, bouts of rheumatic fever can be present at practically any period of the year. Regarding a history of acute infections of the throat due to hemolytic streptococci or of scarlet fever, in only 37% of the patients were positive data obtained. Tonsillectomy was performed in 110 patients. In 49 it was done after the first bout of rheumatic fever, and during the period of observation these patients had no recurrences of rheumatic fever. In 34 patients on whom tonsillectomy was performed, the first bout did not occur until months or years after the operation. In another group of 22 patients exacerbations of their rheumatic fever did not occur until months or years after the operation. A series of 2,156 case histories of children and adults admitted because of rheumatic fever or glomerulonephritis was reviewed. In only 1.85% of these were both pathological processes present, and in only 0.4% were they present simultaneously. A series of 11,697 autopsy reports was analyzed by Prof. E. Croizet, and the frequency of the presence at death of evidences of both diseases was not statistically significant, but Prof. H. Rodriquez found this association to be three times as frequent as that reported by Croizet. In 260 autopsies on patients who died with rheumatic heart disease, Dr. Lamas and his coworkers found signs of chronic glomerulonephritis in 5.7%.

The author stresses the importance of the number of bouts. Thus, in 69% of the patients there was only one attack, in 21% there were two, in 5% there were three, and in 5% there were four or more. In the first attack 50% of the patients had valvular lesions; in the second the percentage was 63; in the third, 66; and in those with more than three, 65. Signs of rheumatic valvular lesions were found in 619 patients in the entire series, and more than one-third of the valvular lesions were detected in children in whom rheumatic fever had not been suspected. Most of the patients were in groups 1 and 2 (New York Heart Association classification) as regards the functional capacity of their hearts. Regarding the size of the heart in relation to the type of valvular lesion, most patients showed a moderate increase in heart size.

Poliomyelitis.—In the July, 1955, issue of *Revista médica de Chile*, Dr. G. Contreras states that 60% of 131 stool specimens from Santiago and 33% of 15 from Osorno were positive for poliomyelitis virus. The author attributes the lower percentage of positive stools from Osorno to delay in shipping the specimens for examination. Dr. Contreras identified 84 different strains of poliomyelitis virus. The culture of the virus permits not only the isolation of the strains but also their typing. Thus, in Chile, type 1 (Brunhilde) was present in 23, type 2 (Lansing) in 3, and type 3 (Leon) in 4 cases. The result of the neutralization of type 2 virus with 150 serums of the normal population of Santiago revealed that in children less than 5 years of age the percentage of positive stools was 48, in the age group 5 to 15 years it was 98, and in persons aged 16 or over it was 94.

FRANCE

Tuberculous Meningitis.—Prof. E. Bernard, president of the International Union Against Tuberculosis, studied 1,941 patients treated for tuberculous meningitis in 14 European countries. Ten questions were asked of the 27 clinicians interviewed; the questions and a summary of the answers follow. 1. Can these patients be treated without recourse to the intrathecal route? Nearly half answered in the negative, and, among those answering in the affirmative, the majority made certain qualifications. 2. Is intrathecal treatment applicable to all patients with tuberculous meningitis? Only Ravina of France and the Spanish workers thought use of the intrathecal route was unnecessary for any patient. The majority believed that this method should not be employed in children under 2 years of age who are treated in the first two weeks of their disease and whose consciousness is not disturbed. Many thought that isoniazid should be given in doses of 30 to 40 mg. per kilogram of body weight, which is not easy in adults. These qualifications are justified by the fact that the oral route associated with the spinal route gives a large proportion of successful results. 3. What agents are given intrathecally? Most workers used isoniazid associated with streptomycin. The rest used streptomycin alone in view of the great diffusibility of isoniazid. Most workers used only the spinal route. The doses of streptomycin varied between 10 and 25 mg. per kilogram of weight, according to the age of the patient. The total doses of isoniazid injected simultaneously with streptomycin varied between 5 and 20 mg. These doses are usually given every day for one or two months. 4. If the intrathecal route is used, does the introduction of isoniazid reduce the number of injections required? All but one answered in the affirmative. 5. Should other products such as tuberculin be given intrathecally? Since the results obtained with tuberculin, streptokinase-streptodornase, and cortisone were not very favorable, these drugs are used only occasionally. 6. What agents are given by mouth? Mainly isoniazid, which Ramos and Ravina use unaccompanied by any other drug, while most workers add streptomycin, at least for the first few months. Half of those interviewed also added aminosalicylic acid, and a few added tuberculin and its derivatives. The dose of isoniazid varied from 15 to 40 mg. per kilogram of weight, according to age. These massive doses must always be used when the drug is given by mouth. The dose for streptomycin was 20 to 60 mg. per kilogram, and that of aminosalicylic acid was 0.3 gm. The average duration of treatment varied from 7 to 12 months. 7. Is surgical treatment recommended? Operative treatment has been much rarer since the introduction of isoniazid. The only operation that is much used is freeing of the optic nerve in cases of blindness. 8. What is the average cure rate? About 80%. Most deaths occurred in the first months of life, as the prognosis is much worse in patients under 2 years of age. 9. Do relapses occur? Relapses did not exceed 5%. They usually followed treatment of insufficient duration, and retreatment usually gave good results. 10. What pathological sequelae were observed? Deafness due to streptomycin was rare and was more likely to be caused by daily overdosage than by prolonged therapy. Motor disturbances occurred at a rate of 5% and had a tendency to recede. In young children, hydrocephalus, convulsions, and psychomotor disturbances sometimes occurred, especially if treatment was begun when the child was comatose.

Hormone Therapy in Pulmonary Tuberculosis.—At a meeting of the Tuberculosis Society in December, Favez of Leysin reported that, in tuberculous meningitis treated with streptomycin given intrathecally and cortisone, no toxic effect on the eighth cranial nerve was noted. Mannes of Brussels reported the case of a patient treated for four months with massive doses of isoniazid without improvement, in whom hormone therapy occasioned rapid amelioration. He thinks that all patients in whom sensitivity of the tubercle bacilli has been demonstrated in vitro but who respond only partially to antibiotics ought to be given a preoperative course of hormone therapy. Depierre's experience with 50 patients indicates that there are three major indications for hormone therapy: prophylaxis connected with the establishment of a pneumothorax (100 mg. of hydrocortisone is injected into the pleura); severe tuberculosis of recent onset with bronchial lesions and cavitation; and fulminating cases. Breton treated 26 primary infections in children and noted good effects on the general condition, body weight, and sedimentation rate. On the other hand, corticotherapy is not useful against hilar adenopathy, periadenitis, or disturbances of ventilation. Hydrocortisone or prednisone may be used in young children, but there is a risk of enuresis.

A new aspect of corticotherapy is its use against bronchial lesions. Morel treated three patients with bronchial tuberculosis after exeresis and one with involvement of the intermediate right bronchus during primary infection. Cortisone was administered on tampons (with chloramphenicol) or in aerosol (with neomycin). Treatment was continued for three or four months. The patients tolerated the medication well, and the functional and anatomic results were excellent. Lemenager reported treating six other such patients; they had either exudation or bronchitis with stenosis. Local therapy gave good results, both when used alone and when combined with general measures. Since certain necessary interventions are rendered impracticable by the existence of bronchial lesions, this particular feature of hormone therapy assumes especial importance. Le Tacon recommended doses smaller than those usually prescribed for cortical hormones. His experience has been with effusions following pneumothorax, which he treats with local injections of hydrocortisone. For serofibrinous pleurisy he prefers a local injection of hydrocortisone followed a week later by puncture, evacuation of the contents, and another injection. Tuberculosis with asthmatic manifestations is amenable to hormone therapy. The minimal effective dose might be based on the temperature curve (when it stops going down, the dose may be increased). Most authors think that if hormone therapy does not take effect immediately it should be abandoned. Extreme care in giving hormones is essential in order to avoid untoward effects.

Changes in the Pituitary Fossa in Hyperhormonal Syndromes.—Herschberg and Creff (*Semaine hôp. Paris* **32**:499, 1956), studying the radiological changes in the pituitary fossa in hyperhormonal syndromes due to the menopause or castration, concluded that the following findings are pathognomonic: a first stage characterized by thinning of the dorsum of the sella and thickening of the posterior clinoid processes with calcium deposits on the retroclinoid ligaments; a second stage characterized by an increase in these changes; and a third stage characterized by complete decalcification in the middle third of the dorsum of the sella, simulating a fracture of the latter. Occasionally the decalcification involves the floor of the sella, which seems to sink into the underlying sphenoidal sinus. The authors believe that these changes are caused by a marked vasodilatation accompanying the pituitary hyperactivity and that the resultant increase in intrasellar pressure corrodes the weakest walls of the sella (dorsum and floor). These congestive phenomena are therefore amenable to anti-inflammatory radiotherapy of the pituitary region.

Vinyl Ether.—At a meeting of the Medical Society of the Basque Region, M. Lemoine reported on the use of vinyl ether as an anesthetic in 55 persons. This agent was used alone, as a starter, or to facilitate the passing from pentobarbital to ether. In all cases the anesthetic was administered drop by drop in a closed circuit with oxygen. The patients fell asleep in less than one minute, reawakening was immediate, the product was well tolerated, and there were no accidents. Hypersecretion occurred in 10% and vomiting in 7%, showing the need for premedication with atropine. Respiratory arrest occurred in two patients but disappeared when the mask was taken off. Controlled respiration was unnecessary. Vinyl ether is especially useful in children, as a starter in cesarean section, and when venipuncture is difficult. It is especially valuable to the general practitioner, especially in rural areas, provided he has the necessary equipment and provided he limits the duration of anesthesia to 20 minutes if no oxygen is available.

Hibernation in Neurosurgery.—Professor Petit-Dutaillis (*Rev. path. gén. et comp.* **669**:939, 1955) reported the results of his experiments with artificial hibernation in the surgical treatment of severe cerebral trauma and brain tumors. His results were not brilliant. He emphasized the dangers to these patients of the rewarming, even after the critical stage has been passed. The drugs used to induce hibernation have unfortunate hypnogenic consequences for patients in coma, and they mask the true state of consciousness and the neurological signs indicating deterioration of the patient's condition. It is difficult to induce hypothermia in a wounded or sick patient whose thermoregulatory centers are already disturbed by injury to the brain. When hypothermia is of cerebral origin, the temperature of the patient should be brought back to its normal level, not further lowered. The author prefers simple neurovegetative disconnection achieved with chlorpromazine alone or in combination with promethazine (Phenergan) and meperidine (Dolosal).

SWITZERLAND

Central Nervous System in Anorexia Nervosa.—F. Martin (*Helvet. med. acta* **22**:522, 1955) studied anorexia nervosa in two girls whose disease had lasted 7 and 12 years respectively. The first patient was 16 years of age when the disease began after an episode of influenza, and in the second the onset coincided with puberty at age 12 and temporal epilepsy. Autopsy showed no true pathogenic lesion in the anterior lobe of the hypophysis or the infundibulotuberian region. Changes in the nervous system consisted of diffuse lesions in the neuronal elements, glia, and vessels; the white substance remained unaffected. These changes are probably secondary to cachexia.

Thyroid Function in Anorexia Nervosa.—In the same journal, Galetti and Labhart reported that protein-bound iodine determinations in patients with anorexia nérvosa are within normal limits, as are those of radioactive iodine fixation by the thyroid gland. The amount of cholesterol is on the whole less than normal, and basal metabolism tests show lowering of from 6 to 44%. These data invalidate the hypothesis that a decrease in oxidation through the thyroid system is responsible for anorexia nervosa. A generalized decrease in oxidation at the periphery might be responsible for lowered metabolism, but this is just a hypothesis.

Metabolic Disturbances in Anorexia Nervosa.—A further article by Wild and his co-workers points out a paradox in anorexia nervosa. Utilization of carbohydrates and amino acids is disturbed in this disease by virtue of the dietary deficiency. These disturbances, which aggravate the cachexia, are associated with a decrease in basal metabolism. The values for the basal metabolism are the same whether thyroid function is normal, decreased, or even increased. The authors suppose that the gland reacts to the decrease in peripheral combustion by a compensating mechanism. Similar findings exist in older persons with disordered resorption and amino acid utilization. In patients with lesions of the hepatic parenchyma, the authors found an increase in circulating thyroid hormone secondary to its slowed destruction by the liver, but there was no increase in basal metabolism. These patients also display severe disturbance in carbohydrate and amino acid metabolism. Thus it is clear that metabolic dysfunction secondary to dietary deficiency, enzymatic insufficiency, or an organic lesion of the peripheral cells may awaken a compensating mechanism in the thyroid. It would seem that the thyroid attempts to stimulate peripheral combustion without a corresponding rise in basal metabolic activity. That the gland could be stimulated by the anterior hypophysis in anorexia nervosa is debatable, since hypofunction of this gland would seem proved by the amenorrhea. It seems that the periphery stimulates the compensating action of the thyroid directly when cellular combustion is disordered by the metabolic disturbances mentioned.

Bronchoesophageal Interrelations.—A. Soulas of Paris reported to the Otolaryngology Clinic of Geneva on the dysphagia caused by some diseases of the bronchi and, conversely, respiratory symptoms caused by esophageal conditions. Bronchial cancers, especially those of the left bronchus or of the mediastinohilar type, may have dysphagia as their only symptom, with a radiological image resembling cancer of the esophagus and no clinical or radiological bronchopulmonary signs. Another disease that sometimes simulates an esophageal condition is tuberculosis of the bronchial lymph nodes or hilus. Calcifications, esophageal hernia, or diverticulosis may be sequelae of this disease, leading to both bronchial and esophageal symptoms but more often to an esophageal syndrome alone, consisting of mild dysphagia, dorsal pain, and diverticula seen radiographically. Among the esophageal disorders with respiratory symptoms, the best known is stenosis at the cervicothoracic level, which produces cough,

tracheitis, or intractable tracheobronchitis. Other conditions with respiratory complications are high-placed esophageal cancers, simple cricopharyngeal diverticulosis, or compression due to thyroid tumor. Soulas studied a series of patients with these disorders who complained only of respiratory disturbances. Symptoms referable to the digestive tract could be elicited only on questioning in some patients. One group of patients had vague thoracic disturbances, characterized principally by dorsal or precordial pain; slight cough, especially at night; and some difficulty in breathing. These symptoms were caused by dilatation of the lower cervical region due to high esophageal tumor, thyroid cyst, or cricopharyngeal diverticulum or by diverticulosis of the middle or lower third of the esophagus. A second group of patients had incessant cough with some expectoration and oppression of the lower thorax, with roentgenologic findings of either a wide paramediastinal shadow on the right or a rounded hilar opacity. Contrast medium examination of the esophagus revealed the true cause of the symptoms: a huge dolichomegaesophagus. In a third group, the symptoms were heaviness, epigastric fulness, and retrosternal pain radiating upward toward the trachea and pharynx. Radiography showed esophageal hiatal hernia with incontinence of the cardia. It should be kept in mind that bronchoesophageal symptoms can often be misleading, so that the proper therapeutic measures can be applied.

Effect of Noise.—Prof. J.-P. Taillens reported to the Vaud Medical Society in Lausanne that the human ear has little protection against the stress of noise. It is a highly sensitive organ, as shown by the fact that the whispering voice requires an energy of only 0.001 microwatt. Thanks to the use of audiometry, we can now measure the trauma due to noise qualitatively and quantitatively. The general and psychic state of the organism is seen to be affected by slowing of cerebral activity and gastric and metabolic hypofunction. Deafness may result. P. Schneider of Lausanne said that no psychic disorders are attributable directly to noise; it is only an aggravating factor. Noise can initiate an attack of epilepsy, and patients with carbon monoxide intoxication or cranial trauma are more sensitive to it. Noise may be defined as a "nonmusical, disturbing sound," or an "undesirable sound." It is therefore evident that subjective attitudes play an important part in the disturbance threshold. Workers in noisy factories appear to adjust perfectly to their surroundings after a few days, during which a syndrome consisting of headache, irritability, and slight digestive disorders may be present. This equilibrium may be only apparent, however, since results of various tests with noise are contradictory and nothing definite is known. Some workers have reported sharpening of mental faculties in a noisy environment. Physiologically, noise can be defined as a stress acting on the hypothalamus. Experiments with rats have shown that noise produces arterial hypertension over a period of several months. This elevation of pressure was reversible and appeared only in undomesticated rats.

Soviet Participation in WHO.—The Soviet Union signed the World Health Organization constitution in July, 1946, and became a member of the organization in March, 1948. In February, 1949, the Soviet Union informed the director-general of WHO that it no longer considered itself a member, but, since the WHO constitution does not provide for withdrawal from membership, the Soviet Union and the eight countries (Albania, Bulgaria, White Russia, Czechoslovakia, Hungary, Poland, Rumania, and Ukraine) that took the same action were considered inactive members. On several occasions WHO invited these countries to resume active membership. In July, 1955, the representative of the Soviet Union to the United Nations Economic and Social Council stated that the Soviet Union was "rejoining" WHO. Dr. Nicolai Khmelev, Deputy Minister of Health of the Soviet Union, informed the executive board of WHO in January that his country believed international cooperation to be necessary to protect the health of the world's population and was ready to participate in the work of WHO. He hoped that the executive board would adopt a favorable solution to the financial problems involved. In the discussion that followed, some members expressed a doubt as to whether the executive board could make a recommendation to the WHO meeting in Geneva next May on the financial aspects of this question. The board did, however, adopt a resolution recommending warmly to the next World Health Assembly the reintegration of the Soviet Union in WHO.

Renal Function in Acute Porphyria.—During the clinical study of a patient with acute porphyria associated with transitory arterial hypertension, P. Cottier and E. Blaser (*Helvet. med. acta* **22:**502, 1955) examined kidney function by means of clearance tests. They found that the amount of irrigation with blood was lowered to 60% of normal. Between the 36th and the 44th day of illness, that is, about 10 days after the hypertension had disappeared, irrigation became normal again. This would seem to indicate that hypertension in porphyria is of extrarenal origin. On the 15th day, the glomerular filtration rate was normal, though the plasma flow was diminished, indicating the existence of spasm in the efferent arterioles. Renal resistance was similar to that in essential hypertension, that is, there were spasms in the afferent and, to a lesser extent, in the efferent arterioles. The oliguria present between the 8th and the 24th day of illness was not the result of decreased glomerular filtration but of increased tubular resorption of water. The diuresis following is then not due to an increase in glomerular filtration. The fact that sodium *p*-aminohippurate extraction was normal showed that no severe changes had taken place in the tubules.

Aldosterone and Cortisone.—The most significant symptoms of adrenal cortical hypofunction (Addison's disease), such as asthenia, arterial hypotension, and nausea, disappear within several hours after an injection of 150 mcg. of aldosterone intramuscularly, only to reappear eight hours later. Like cortisone, aldosterone reestablishes electrolyte balance and corrects dehydration, but its dosage is 30 times less. Sodium retention with aldosterone, as in the case of cortisone, is linked to an increase in extracellular fluid leading to dilution of the blood. A. F. Muller and E. Engel (*Helvet. med. acta* **22:**490, 1955) tested normal persons to compare the effect of the two hormones administered intravenously. They did the same in a patient with adrenal cortical hypofunction. After a week, the body adapts itself to the hormonal surcharge and maintains its stability even when a dose of 250 mcg. of aldosterone is added. This supplementary aldosterone continues to act on the kidney, causing it to retain sodium while water is eliminated, diuresis is increased, weight remains stable, and the hemodilution is attenuated. The difference in the action of these hormones on normal and Addisonian subjects is quantitative and not qualitative.

Male Sterility.—At the Gynecologic Clinic of the University of Geneva, R. Weyeneth reported on 600 infertile couples, among whom 32% were childless because of inadequacy of the male partner (aspermia or azoospermia in 153 and severe oligospermia in 45), 34.5% because of inadequacy of the female partner, and 33.5% because of impaired fertility of both partners. The diagnosis of male infertility is based chiefly on examination of the semen. Normal sperms are so judged on the basis of volume (at least 2.5 cc. in one ejaculation), total number (125 million), motility (80% must be motile 30 minutes after emission; 60% after 2 hours, and 25% after 6 to 8 hours), and shape (80% normal). Three samples must be tested before any conclusions are made. While the spermogram allows diagnosing of infertility, biopsy of the testes is necessary for differentiation between mechanical and functional aspermia. This minor surgical procedure can indicate the proper therapy to be used. Unfortunately, it often shows the patient's condition to be such that no hormone or other therapy can improve the results.

Thrush Complicating Malignant Hemopathy.—Infection with Candida albicans is one of the commonest complications of antibiotic therapy after infection with Micrococcus pyogenes var. aureus. Recently the prolonged use of cortisone and corticotropin and the administration of antimitotics to children with acute leukemia have been blamed in this regard. H. Dubois-Ferrière and his co-workers (*Helvet. med. acta* **22:**477, 1955) noted septicemia due to C. albicans in two adults with acute leukemia, one with malignant reticulosis, and one with Hodgkin's lymphogranuloma. These patients had received cortisone and antibiotics, and two of them had been given antimitotics in addition. They died from generalized thrush that had taken the form of fulminating gastroenteritis in three and generalized

septicemia in one. One of the patients had suppurating metastases in the kidneys, muscles, myocardium, brain, liver, bronchi, and pericardium.

Iron Metabolism and Lead Poisoning.—E. Beck and his coworkers (*Helvet. med. acta* **22:**442, 1955) studied iron metabolism in rabbits intoxicated with Sedormid (allyl-isopropylacetylcarbamide), a sedative that produces a porphyria independent of erythropoiesis. Their experiments showed that, in saturnine anemia, iron metabolism is carried on normally, with the iron probably being incorporated in the erythroblasts of the bone marrow. It is the intracellular synthesis of hemoglobin that is impaired. There are two possible explanations for this phenomenon: enzymatic deficiency preventing the iron from entering the normal porphyric cycle and a primary change in the cycle prohibiting association with the iron. The porphyrin resulting from this disturbance in hemoglobin synthesis is probably the hemolytic factor in the anemia from lead poisoning.

Iron in Gastric Juice.—Palmieri and Giacca (*Schweiz. med. Wchnschr.* **86:**46, 1956) investigated the possible relationship of nonhemoglobic iron in human gastric juice and hydrochloric acid secretion and found that no variation in the amount of iron corresponds to increased free hydrochloric acid or total acidity after histamine stimulation. There was a distinct correlation between intravenous administration of iron and the iron content of the gastric juice, which was increased to between 311 and 422% of the initial values. Iron excretion by the stomach appears to be accomplished within the upper two-thirds of that organ.

Hemochromatosis and Iron.—Lanini (*Helvet. med. acta* **22:**401, 1955) studied a patient with all the classic signs of hemochromatosis in whom the diagnosis was later confirmed at autopsy. He agrees with Schwietzer that the condition is due to a deficiency of apoferritine, a protein synthesized by the body and forming ferritine in combination with stored iron. When an insufficient quantity of apoferritine is produced, it is supersaturated with iron and thus gives rise to the formation of hemosiderin, which is a pathological ferric deposit and not a physiological one like ferritine.

UNITED KINGDOM

Prevention of Tuberculosis.—The first progress report of the tuberculosis vaccines trial committee of the Medical Research Council on the prophylactic value of BCG vaccine and the vole bacillus vaccine (*Brit. M. J.* **1:**413, 1956) states that, between the fall of 1950 and that of 1952, nearly 56,700 children, aged 14 to 15½ years, in London, Birmingham, and Manchester volunteered for the trial with the consent of their parents. Recent contacts with known tuberculous patients were excluded; the remainder were tested with tuberculin, and radiograms were taken of their chests. Volunteers whose reactions were negative in the tuberculin test were divided into vaccinated and unvaccinated groups. The London children were either unvaccinated or vaccinated with BCG. The Birmingham and Manchester children were divided into groups receiving BCG vaccine, vole bacillus vaccine, and no vaccine. Those reacting to tuberculin were also followed up. Patients with, or suspected of having, tuberculosis were examined by independent assessors. The length of the follow-up period was two and one-half to four years. In the vaccinated group, reactions of 99.6% of those treated with BCG vaccine and 94.4% treated with vole bacillus vaccine became positive to the tuberculin test. Reactions of all the children vaccinated with a later and more potent batch of vole bacillus vaccine became positive when given the tuberculin test.

The various groups in the trial were compared in June, 1955, and it was assumed that any cases of tuberculosis occurring during the previous 2½ years would have been detected. Not a single case of miliary tuberculosis or tuberculous meningitis occurred in either of the vaccinated groups, but, in the unvaccinated group, there were three cases of the former and five of the latter. The annual incidence of tuberculosis in the BCG-vaccinated group was 0.37 per 1,000; in the unvaccinated negative reactors it was 1.94 per 1,000. The corresponding figure for the group given the vole bacillus vaccine was 0.44 per 1,000 and for the control group of negative reactors 2.06. The higher figure for those given the vole bacillus vaccine was attributed to a low-potency vaccine given to about one-third of the children. In those who had positive reactions when tuberculin-tested at the beginning of the trial and who reacted strongly, the rate was 29.3 cases of tuberculosis per 1,000 annually. Those reacting less severely to tuberculin had an incidence of 0.74 to 0.78 per 1,000. It is clear that the vaccinated children were better protected than those naturally infected with Mycobacterium tuberculosis.

Supplementary incomplete follow-up information for up to four years suggests that the protection of vaccination is maintained for at least this long. Complications of vaccination included occasional regional adenitis and delayed healing of the local lesion. Two cases of erythema nodosum were also attributed to BCG vaccine. A number of those given vole bacillus vaccine developed lesions indistinguishable from those of lupus vulgaris at the site of vaccination. Twenty-two of these required treatment. If none of the 56,700 subjects had been vaccinated, a total of 246 cases of tuberculosis would have been expected in 2½ years; there were only 165 cases, showing the benefit of BCG vaccination for adolescents in an urban industrialized community. A longer period of careful supervision is necessary to calculate the full results of the trial. At present BCG vaccination as a routine is offered only to those likely to be exposed to a high risk of infection, such as nurses.

More Rules for Prescribing.—The Ministry of Health has circulated a further issue of *Prescribers Notes* suggesting what physicians should and should not prescribe in certain conditions. While the recommendation cannot be enforced, physicians in the National Health Service can be fined for overprescribing or for repeatedly prescribing expensive drugs unnecessarily. These notes are a reminder of this power of the Ministry. Attention is drawn to the increasing tendency to prescribe hematinics without making a diagnosis of anemia. Although there has been a decrease in the prescribing of folic acid, there has been an increase in that of vitamin B_{12}, which, says the Ministry, is being given to patients who appear to be anemic without any blood examination having been made first. The effect of this is to mask cases of megaloblastic anemia and to make the diagnosis of pernicious anemia impossible for weeks or even months. These remarks also apply to the indiscriminate use of liver preparations. Another criticism is the overprescribing of other vitamins and vitamin preparations. True vitamin deficiency is rare in Great Britain, and the time spent in a more careful review of the vague symptoms, for which at first sight a vitamin prescription may seem apt, will usually prove well worthwhile. If a vitamin deficiency does exist, the physician is asked to make quite sure that the correct amount of the factor lacking is prescribed. The use of "blunderbuss" vitamin mixtures is deprecated, because the preparations marketed rarely contain enough of any one vitamin to treat a deficiency due to its lack.

Practitioners are warned of the dangers attached to the administration of some of the wide-spectrum antibiotics, such as the risk of vitamin deficiency and lesions such as stomatitis, glossitis, colitis, and vulvovaginitis. Professor Garrod is quoted on the widespread development of bacterial resistance to some antibiotics. He recommends penicillin for erysipelas, scarlet fever or any other known infection by hemolytic streptococci, lobar pneumonia, gonorrhea, syphilis, and actinomycosis; streptomycin for plague and tularemia; chloramphenicol for typhoid; and the tetracyclines for typhus and undulant fever. Strains of Micrococcus pyogenes resistant to penicillin and the tetracyclines are being seen with increasing frequency. The use of erythromycin for dealing with micrococci resistant to all other antibiotics is recommended, but even this will fail if misused. It is emphasized that, for serious infections due to erythromycin-resistant micrococci, there may be no remedy. The marketing of mixtures of penicillin and streptomycin is not advocated, because of the danger of deafness after continued administration of the latter. *Prescribers Notes* hints that the more expensive proprietary inhalants are being prescribed to asthmatics instead of the cheaper pharmacopeial ones. Prices are quoted showing the difference in price of identical pharmacopeial and proprietary preparations of inhalants. In one case the proprietary one costs four times as much as the pharmacopeial equivalent.

Thymic Origin of Hodgkin's Disease.—Dr. A. D. Thomson has suggested that in Hodgkin's disease a tumor arises in the thymus and that metastases from this site produce the clinical manifestations of this disease (*Proc. Roy. Soc. Med.* **49**:97, 1956). The epithelium of the thymus is represented by the multinucleated Hassall's corpuscles, which normally originate from a large mononuclear epithelial cell, which then divides to form an "owl's eye" or "mirror image" type of giant cell. Further progression results in cells containing from 3 to 20 or more nuclei until the fully developed Hassall's corpuscles are formed. Eosinophilic polymorphonuclear leukocytes are also present in normal thymic tissue. If these thymic mononuclear cells, "mirror image" giant cells, and multinucleated giant cells are incorporated in a fibrous stroma with an admixture of lymphocytes and polymorphonuclear leukocytes, the histological findings of Hodgkin's disease are produced. Thomson has seen the histological appearances of Hodgkin's disease arising in the thymus and the metastatic involvement of other glands in the body. There are lymphatic paths from the thymus to the cervical, internal mammary, and tracheobronchial lymph nodes and via the thoracic duct to the retroperitoneal nodes of the abdomen. Thymic tumors in Hodgkin's disease may or may not be obvious. Sometimes the tumor in the thymus is very small, or it may occur in ectopic thymic tissue. Many of the cases diagnosed in the past as Hodgkin's disease are true examples of metastatic thymic tumor; many of the mediastinal masses seen in pulmonary roentgenograms are in fact thymic tumors rather than enlarged mediastinal lymph nodes. Therefore, thymectomy or irradiation of the thymus may have a place in therapy of Hodgkin's disease. Dr. A. Jelliffe, who also accepts this etiology, advocates treatment of the disease in its early stages by removal of the thymus and the cervical, internal mammary, anterior mediastinal, and tracheobronchial groups of lymph nodes. When this is not possible, radiotherapy is an alternative, with exposure to 3,000 r in three or four weeks. He advises removal of the thymus in all cases that are discovered early.

Experiment in Nursing Training.—An experimental training course for nurses, designed to develop the qualities of leadership and judgment required of those holding senior nursing appointments, will be tried out in the Glasgow Royal Infirmary this year. This course, the first of its type in Great Britain, is based on the findings of a report by the Nuffield Provincial Hospitals Trust on the analysis of the work of hospital nurses. The project will be financed by this trust and the department of health for Scotland. Formal study, at present covering three years, will be condensed into two, with a third year devoted to practical hospital work. The syllabus of the General Nursing Council will be followed; psychiatric and obstetric nursing will also be included. A 40-hour five-day week will be worked, instead of the present 48-hour week, and a four weeks' annual vacation will be permitted. This scheme would give more time for study. Theoretical and practical training will be integrated, and qualified physicians and other instructors will teach the application of theoretical knowledge in the hospital wards. Training is free, with the usual monetary allowances given to student nurses. It is expected that graduates will be promoted after two or three years to the position of head nurse. Promotion to senior posts within the profession is expected to be more rapid than at present. The scheme is intended for university graduates and girls of high educational attainments between the ages of 18 and 25. The students will not take the preliminary examination, as is done normally, but will take their final examination at the end of two years, although they cannot be registered as nurses until they have completed their third, or intern year in a hospital.

Remuneration of Physicians.—The *British Medical Journal* of Feb. 11 issued a statement to the effect that the Minister of Health has been informed by the general medical services committee of the British Medical Association, representing general practitioners, and the joint consultants committee, acting on behalf of all grades of hospital medical staffs, of the intention to submit an early claim for an increase in the "betterment" factor. This is a claim for the remuneration that the Spens Reports laid down to be proper for the medical profession and which was accepted by the government at the inception of the National Health Service. The claim, not expected to be ready until the end of April, is intended to rectify the injustice brought about by the decline in the value of money. Statistical evidence is contrary to the estimate that a man earning $2,000 per annum in 1938 would be representative of a large proportion of the middle and professional classes and today should have a gross income of $6,000 to $7,000. This has not taken place, and the result is that the rising young men of every profession appear to be 15 to 30% poorer while the country is on the average 7% richer. The professional man is thus at a great disadvantage in comparison to the wage earner who now gets about 3.5 times what he earned in 1938. This new claim represents a united front by the medical profession, which is now to a large extent nationalized, and aims at "securing proper rewards for professional skill and work in a State-provided medical service."

Use of Acetazolamide in Epilepsy.—Golla and Hodge record that acetazolamide has great anticonvulsant activity, particularly in inhibiting petit mal attacks (*Lancet* **1**:304, 1956). They gave 70 patients with petit mal attacks a daily dose of 250 mg. of the drug. The patients were selected from those having from one to 100 attacks daily; all had resisted treatment with other drugs. Of the 70 patients, only 2 showed no improvement; 25 had no further attacks in the first month of treatment, and in the remaining 43 the number of attacks fell to one or two a month. During the second month's treatment, the improvement was maintained, and only 20 patients were having occasional seizures. One patient who had had more than 200 attacks a day was free from them for two months and then reverted to two or three a day. In such cases increasing the dose to 500 mg. daily led to some further improvement. On stopping treatment the attacks returned, sometimes within a day. The authors described the effect of acetazolamide in petit mal as phenomenal. No side-effects beyond somnolence and occasional formication of the extremities in two patients were noted. Acetazolamide is a carbonic anhydrase, leading to the accumulation of carbon dioxide at the nerve-cell membrane, and the decrease in the velocity of conduction of impulses may be related to the lowered susceptibility to epileptic attacks. The tendency to acidosis may act in the same way as the now obsolete ketogenic diet.

Hospital Farms.—It has been customary for mental hospitals to run their own farms. This was the subject of a short debate in the House of Commons on Jan. 30. Miss Patricia Hornsby-Smith, parliamentary secretary for the Ministry of Health, said the basis of this was the need to provide security, privacy, and outdoor occupation for suitable patients, and the value of the farm produce in the diet of patients. In many hospitals, however, the farming has developed into a large-scale venture undertaken for its own sake. A departmental committee, set up in 1952 to investigate this, found that only 3.3% of the male patients were employed in farming and 3.2% in gardening and only 0.3% of the female patients were employed at all. The present legal position is that hospital management committees under the National Health Service have no authority to run a farm except to provide occupation or food for patients. As a result decisions have been made about 126 farms; of these, 47 are to cease operating and 38 to reduce their activities. One factor in this lack of employment of patients on the farms and the greater use of additional staff has been the complexity of modern farming methods.

Diabetic Pneumaturia.—Foord and his co-workers have drawn attention to the occurrence of pneumaturia in diabetics (*Brit. M. J.* **1**:433, 1956). Pneumaturia is usually caused by a fistula between the bladder and intestine or vagina. In diabetics it is due to infection of the urinary tract, usually with Escherichia coli, which ferments the glucose present in the urine. In most but not all cases, there is evidence of obstruction of the lower urinary tract or residual urine due to diabetic neuritis. The organism from one patient was shown to produce gas when grown in a broth containing glucose. If a patient has pneumaturia, diabetes should always be considered. It is not sufficient just to test the urine for sugar as this may be largely removed by bacterial action. Blood sugar determinations should be made or the urine tested for glucose after infection has been controlled. Diabetic pneumaturia disappears if glycosuria is controlled by suitable diabetic management and infection eliminated by antibiotics or chemotherapy, combined with relief of urinary obstruction, if this exists.

CORRESPONDENCE

NAVAL MEDICAL SERVICE

To the Editor:—I am writing this letter in answer to the neophytes of naval medicine, Lieutenants Raffensperger and Hahn, whose letter appeared in THE JOURNAL, March 10, 1956, page 899. I was separated from the naval medical service one year ago, after having been recalled to active duty. At the time of my recall I was bitter, but my views of naval medicine are contrary to those expressed by the two lieutenants. I am a certified specialist but spent more than half my active duty time at sea with the Military Sea Transportation Service; the remainder of my tour of duty was spent at the St. Albans Naval Hospital. Other certified specialists were also assigned to sea duty, but, at the time, specialists were plentiful. While on active duty, I never found the Navy Medical Corps overstaffed with doctors; in fact, a few more were needed. At the St. Albans Naval Hospital, qualified specialists were in their appropriate billets, though young, untrained medical officers were not always in a position of their choice. Dependent medical care at St. Albans has been of the highest caliber. Qualified specialists were always on hand in the clinics, but such a situation is uncommon in civilian practice today. In fact, I think that the care received by dependents at naval hospitals is better than that received by many nonmilitary persons. The care of dependents has also been a stimulus to the military medical officer. Prior to World War II most doctors entered general practice, and one cannot always expect an older doctor to go back to the residency type of training. Frequently older specialists "slow down" and assume administrative positions. It is to our advantage to have physician-administrators in command of medical facilities because we certainly do not care to have nonmedical personnel managing the medical profession. It is true that some career medical officers prefer the shorter working day, but a similar situation exists in private practice. Group clinics have flourished because of the doctors' desires for better working hours. How many doctors in private practice respond to late calls? During my years of medical practice I have heard many young doctors gripe about the lack of medical work when in the armed forces, but these same fellows growled when they had a few extra hospital admissions or had to make a few house calls at odd hours. It seems to me that the younger doctor is responsible for the shorter house staff work week. The old-timers worked longer hours than the young blood of today. I have discussed the letter of Drs. Hahn and Raffensperger with other ex-naval medical officers of recent vintage, and they think the two authors are incorrect in many of their statements. Better pay, better rank, and stability of assignment are the necessary features to attract trained medical officers.

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To the Editor:—I find it impossible to let the recent joint letter of Drs. Raffensperger and Hahn (*J. A. M. A.* **160:**899 [March 10] 1956), relating to naval medical service, pass without rebuttal. As a reserve medical officer about to return to civilian practice after 33 months of active duty with forces afloat, I feel qualified to answer the wholly unsubstantiated charges made; and seven years of unlimited rural general practice prior to this tour of duty give me some perspective in a comparison of service and civilian medical practice. The allegations of Drs. Raffensperger and Hahn run roughly to the effect that the naval medical service is constituted of a malevolent oligarchy, headed by incompetents who devote their energies to the frustration of an overstaffed group of perfectly trained junior physicians, with an end-result of therapeutic chaos and general dissatisfaction in the ranks of patients, dependents, and practitioners alike. This is simply not the case; and none in moments free of emotionalism could maintain otherwise. Without elaboration, I might point out that the unpaddable statistics of morbidity, mortality, and disease control in our armed forces within the last two decades suffice to settle the question without further argument. These figures do not derive from medical incompetence and mismanagement; rather, they outline a medical state of affairs of which any civilian group would be proud. In my 33-month tour of duty, I have been privileged to see equal amounts of dispensary and shipboard medical care in all of the assigned areas in the Pacific, plus a few months of duty in the Atlantic, extending to the Caribbean area. I find that the quality of medicine practiced and the educational opportunities available to the practitioner are generally superior to those found in civilian practice. This is not to malign my civilian colleagues but simply to set the record straight. Hospital care of our servicemen is supervised, or totally managed, by certified specialists; and I, for one, am willing to accept a longer period of hospitalization in the knowledge that, if warranted, my patient will have benefits of multiple consultation quite beyond the means of ordinary civilian practice. Military dependents do not receive inadequate care, nor do they feel imposed upon as a group. Certainly they desire personal attention that is not always available in the service; yet I submit that the sick dependents get a full measure of local care and have the fully utilized backlog of competent consultation to guard against diagnostic or therapeutic error.

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MYASTHENIA GRAVIS

To the Editor:—In the summary at the beginning of my article, "Studies in Myasthenia Gravis—A Rapid Diagnostic Test" (*J. A. M. A.* **160:**153 [Jan. 21] 1956), I find an error that completely changes the original meaning; namely, "Excessive doses of the drug elicit false-positive reactions in a small group of hyperreactive subjects" should read "false-negative," as I so state on page 155, line 12 of the summary.

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SPINAL ANESTHESIA AND VAGINAL DELIVERIES

To the Editor:—An abstract of an article entitled "Spinal Anesthesia in More Than 500 Vaginal Deliveries," by Marvin Elkins, appeared on page 513 of THE JOURNAL, Feb. 11, 1956. It is not appreciated by many readers that publication of an abstract in THE JOURNAL does not imply editorial endorsement. Frequently techniques will be used on the basis of such abstracts, with or without study of the original article. In this instance, a "simple and practical technique of spinal anesthesia" is presented. The dosage of 20 to 22 mg. of tetracaine is recommended. In view of the numerous reports of competent clinical investigators and of practicing anesthesiologists, this seems to me to represent a large overdose. In the average parturient woman, I believe this could readily result in either high spinal anesthesia, with respiratory paralysis, or in an unduly high concentration of the drug surrounding the distal spinal cord and cauda equina. Satisfactory anesthesia for "saddle block" can be produced with from 3 to 5 mg. of tetracaine, and anesthesia to the 9th or 10th thoracic

segment requires a dose not exceeding 8 mg. For vaginal delivery, levels higher than this are not necessary or desirable. Should prolongation of anesthesia be required, it has been shown that the addition of epinephrine to the injected solution is safe and efficacious. It would seem to be most fortunate that none of the 500 patients cited developed complications or sequelae. Incidentally, the conclusion that the use of spinal anesthesia shortens the hospital stay in parturient patients is misleading, since the same result is afforded with conduction or inhalation anesthesia when properly selected.

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TRANQUILIZERS AND PURPURA HEMORRHAGICA

TO THE EDITOR:—Because of the widespread acceptance of the tranquilizing drug meprobamate, marketed under the names of Equanil and Miltown, I thought the following brief case report would be of interest. A 42-year-old female with insomnia, tension headaches, and other complaints of an anxiety nature was given meprobamate, 400 mg. three times a day, on March 15, 1956. After taking the third tablet she noted a feeling of warmth in the arms and thighs and on March 16 noted a widespread hemorrhagic rash on her axillas, breasts, chest, abdomen, arms, and inner thighs and legs. She continued the medication and had a temperature of 101 F (38.3 C), with hard, shaking chills and moderate edema of the legs and ankles. When seen on March 19, she had a widespread purpura involving the axillas, breasts, chest, arms, inner thighs and legs. Physical examination was otherwise not remarkable. No history was given of having taken other drugs or medication for the past six months. A blood study showed 14,800 white blood cells per cubic millimeter, 46% neutrophils, 4% stabs, 32% lymphocytes, 13% monocytes, and 5% basophils. Bleeding and clotting time was 14 minutes (Lee-White). There were 470,000 platelets per cubic millimeter. Clot retraction was completed in two hours. She was treated with corticosteroids, with a rapid clearing of the hemorrhagic-type rash. I have recently heard of three similar cases. It is of interest that in all cases the purpura appeared by the time the third tablet had been taken. It is obvious that Equanil and Miltown are not safe drugs for promiscuous dispensing.

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EPILEPSY

TO THE EDITOR:—An article in THE JOURNAL, March 3, 1956, page 736, illustrates well a basic problem in the use of the word "epilepsy." The authors, Dr. William Bolt and Edward A. Lew, discuss certain aspects of insurance company data and call attention to the fact that a follow-up study of approximately 1,000 persons who had had one or more attacks of "epilepsy" revealed a significant increase in mortality above the standard risks. It can be contended that (1) this observation has limited meaning and (2) it unfairly adds one more socioeconomic handicap for those many patients whose epileptic disorders are benign in manifestation and course. The various forms of epileptic discharge can be clinically mild or severe and can result simply from genetic dysrhythmias or from serious brain lesions. Some of the underlying causes are progressive and some static. Hence, a statistical conclusion about prognosis that takes no account of these differences has little value. I recognize the difficulties that would be encountered in the proper classification of the types and causes of epileptic seizures in any large-scale study, but if such distinctions cannot be made the significance of the over-all mortality figure is dubious and its publication misleading.

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LAW DEPARTMENT

MEDICOLEGAL ABSTRACTS

Can Osteopathic College Qualify as Approved Medical School?—The plaintiff, Chicago College of Osteopathy, filed an action to review a decision of the Department of Registration and Education denying plaintiff's application for approval as a college whose graduates may be permitted to take examinations conducted by the department for a license to practice medicine in all its branches. From an adverse judgment, the plaintiff appealed to the appellate court of Illinois.

The Medical Practice Acts of 1899 and 1917 were held unconstitutional because of discriminatory provisions against osteopaths. The present Medical Practice Act, however, has been held constitutional. It requires the department (1) to make rules for establishing reasonable minimum standards of educational requirements to be observed by medical colleges or by any professional school, college, or institution teaching any system or method of treating human ailments and (2) to determine the reputability and good standing of all such schools, colleges, and institutions. It also provides that the act shall not be so construed as to discriminate against any medical college or any professional school, college, or institution teaching any system or method of treating human ailments on account of any such system or method that may be taught or emphasized therein. Actually, however, the only colleges approved by the department, whose graduates are permitted to practice medicine in all its branches, are those that grant the degree of doctor of medicine. The department based its denial of plaintiff's application on the unanimous recommendation of the Medical Examining Committee.

The first ground stated by the committee was the plaintiff's failure to comply with rule 5, which requires 16 hours of chemistry and 8 hours in college preparatory English for admission. The plaintiff required a minimum of 12 hours of chemistry and six hours of English; the requirement as to chemistry has since been increased. The evidence showed that this rule is not strictly enforced against medical colleges that grant the degree of doctor of medicine. Twenty-seven of the 80 approved schools require only six hours of college preparatory English and 17 of the 80 approved schools require less than 16 hours of college preparatory chemistry. The committee's second contention was that the plaintiff required a minimum of 4,872 hours of didactic and laboratory instruction for graduation, while under rule 7 a minimum of 5,119 hours is required. Twenty-one of the 80 approved schools require less hours for graduation than provided for in this rule. As its third ground, the committee found that the plaintiff had not complied with section 5 (a), which requires a school to provide at least six full-time instructors of professional rank. The evidence showed that at the time of the hearing the plaintiff had seven full-time instructors of professional rank. The fourth ground for denying plaintiff's application was its failure to comply with section 5 (b), which provides that the faculty should be composed of graduates of institutions recognized as reputable medical colleges who have had training in all departments of medicine. Department heads must be licensed to practice medicine in all of its branches in the state in which the medical college is located and must have a certain number of years of experience in their specialty. The head of the plaintiff's department of surgery fully qualified under this rule. The head of plaintiff's department of medicine graduated from plaintiff's college and has an unlimited license to practice medicine in a number of other states. The head of the department of obstetrics is licensed by the state of Illinois to practice obstetrics and has satisfied the experience requirement. All of the instructors are fully trained in all departments of medicine and have had more than the minimum of experience required. Many of them have unlimited licenses to practice in other states. Part of the plaintiff's course of instruction is carried on at the Detroit Osteopathic Hospital, and those teaching there have an unlimited license to practice in Michigan. The plaintiff said that it had been unable to obtain teachers who hold the degree of doctor of medicine and who

are licensed to practice in Illinois because of the attitude of the medical associations toward the osteopathic profession. The appellate court said that there was no reason from an educational standpoint why a teacher at the Chicago College of Osteopathy should hold an Illinois license to practice medicine in all its branches except where the teacher actually performs surgical operations or prescribes drugs. It was pointed out that in many schools, in the preclinical years, a great part of the teaching is done by men who are not licensed and have no contact with the treatment of patients. Only a part of the teaching of medicine, surgery, and obstetrics in the clinical years is concerned with the actual prescription of drugs or the actual performance of surgical operations. Furthermore, the court pointed out, a number of the approved schools have department heads who do not hold the degree of doctor of medicine and who are not licensed to practice medicine in all its branches in the state in which they teach. The fifth ground for denying the plaintiff's application was that it did not supply an adequate number of dissection tables. There is nothing in the rules specifying the number of tables for dissection, said the court; the only requirement is that each student must dissect the lateral half of a cadaver. No school in Chicago is able to comply with this requirement, because the supply of cadavers is not sufficient. The committee assigned, as its sixth ground for its denial of the plaintiff's application, the plaintiff's failure to comply with section 7, which provides that the work of the student at all times shall be under the guidance of a competent instructor who shall hold a license to practice medicine and surgery in all its branches. Students in clinical training in the plaintiff college perform the same duties and are supervised in the same manner as in other medical schools. While engaged in their clinical work at the Detroit Osteopathic Hospital the students are taught by instructors who all have unlimited licenses to practice in Michigan. Two of the instructors at the plaintiff's college in Chicago have unlimited licenses to practice in Illinois, and students, while studying in Chicago, are under their guidance and supervision.

The question presented to the appellate court was whether the graduates of a school that teaches osteopathy and that meets the same standards and conditions as are applied to medical schools may be permitted to take the examination for the practice of medicine. The record clearly showed, said the court, that as to the schools granting a degree of doctor of medicine the department set a liberal standard for the interpretation of its rules but that as to the plaintiff its interpretation was strict. When judged by the standards that the department applies to medical schools, the plaintiff has substantially complied with the minimum requirements of the rules. The department was unjust, arbitrary, and discriminatory as to the plaintiff in the enforcement of its rules. The department, therefore, violated the nondiscrimination requirements of the Medical Practice Act. The judgment of the lower court upholding the finding of the Department of Registration was reversed and the cause remanded with directions to approve the plaintiff's application. *Chicago College of Osteopathy v. Puffer, 120 N.E. (2d) 672 (Ill., 1954).*

Chemical Tests: Admissibility in Evidence.—The defendant was convicted of driving while intoxicated and from such conviction appealed to the Court of Appeals of New York.

The defendant was stopped by state troopers who had observed him driving his truck in an erratic fashion for about a quarter of a mile. At the officer's request, the defendant agreed to submit to a blood test to determine whether he was drunk. The defendant testified that the request was made in a "gentlemanly manner." The test showed that the alcoholic content of the defendant's blood was 0.183%, substantially more than the 0.15% declared by statute to be prima facie evidence of intoxication. The defendant contended that the results of the test should not have been admitted in evidence. Section 71-a of the Vehicle and Traffic Law, as enacted in 1953, says in part: "1. Any person who operates a motor vehicle . . . in this state shall be deemed to have given his consent to a chemical test of his breath, blood, urine or saliva for the purpose of determining the alcoholic content of his blood provided that such test is administered at the direction of a police officer having reasonable grounds to suspect such person of driving in an intoxicated condition. If such person refuses to submit to such chemical test the test shall not be given but the commissioner shall revoke his license . . . to drive. . . . 4. The person tested shall be permitted to have a physician of his own choosing administer a chemical test in addition to the one administered at the direction of the police officer." He argued that he should have been told of his right to refuse to submit to the test, of the revocation of his license if he refused, and, also, of his right to have an additional test made by a physician of his choice.

The Court of Appeals pointed out that a statute had existed since 1941 that permitted courts to admit evidence of the amount of alcohol in a defendant's blood as shown by chemical analysis. Little use was made of such chemical tests because of doubts as to compelling submission, however. Disturbed by the growing menace of the intoxicated driver and the slight use of the chemical tests, despite their recognized efficacy in reducing drunken driving, the Joint Legislative Committee on Motor Vehicle Problems in 1953 recommended the adoption of section 71-a. This section was directed at the problem of compelling submission to the test. Since the committee knew that results of voluntary tests had repeatedly been used in the courts of the state, it was obvious, said the Court, that the purpose of the committee was not to circumscribe or limit the use of such voluntary tests in evidence. The Court further said that it was difficult to see any need for the protections provided in section 71-a where the driver volunteers to take the test. Since there was no claim that the submission in the present case was anything but voluntary, the judgment of conviction was affirmed. *People v. Ward, 120 N.E. (2d) 211 (N. Y., 1954).*

MISCELLANY

NATIONAL SAFETY CONGRESS

Employment of Epileptics.—At the 43rd National Safety Congress in Chicago in October, Dr. B. H. Gray, director of the National Epilepsy League (Chicago), said that, since modern medical treatment of epilepsy is effective in controlling the seizures in 75 to 80% of the patients with epilepsy to a point where the attacks do not interfere with normal living, one would logically assume that this would result in opportunities for employment for these persons. This unfortunately is not true. The reason that industry still has an almost universal policy of not hiring people with epilepsy, whether or not their seizures are controlled, lies in the stigma associated with the disorder. State laws have added to the stigma associated with epilepsy. Many states had laws making marriage of people with epilepsy a crime or making sterilization mandatory or permissible in persons with epilepsy. Almost all states, in their commitment laws, bracketed insanity, mental retardation, and epilepsy as causes for custodial care. With these inappropriate social consequences of the illness becoming known to the community, there developed a natural desire on the part of people with epilepsy to conceal their condition. As a result, the only people with epilepsy known to the community were those who could not conceal their medical problem, those whose epilepsy was associated with other problems, such as mental retardation or insanity. What the general public knew about epilepsy was related to what was known about a "typical group of epileptics"—a group we now know comprises only 5 or 10% of the total epileptic population.

With the development of effective modern medical treatment, however, people with epilepsy began coming back to the clinics and to physicians' offices for medical care. In addition to the medical rehabilitation achieved, there was an important by-product of this movement: Physicians began to see what a cross section of the epileptic population looked like and to realize that epilepsy is a major health problem. It is estimated that about 1,500,000 people in the United States suffer from convulsive seizures. Epilepsy attacks a cross section of the population, occurring in about the same frequency in both sexes, in all

geographical areas, all races, all economic groups, and at all intellectual levels. Because people with epilepsy frequently are talented and gifted, they are worthy of concern for practical as well as humanitarian reasons, and because the physical handicap in epilepsy varies from zero to 100% in individual cases, it is impossible to generalize about it and to lay down hard and fast rules about necessary restrictions on the activities of epileptics. Experts now generally agree that epilepsy is a result of minor injury to the brain, even though in many instances diagnostic tools have not been developed that can detect the brain injury in individual cases. The convulsive threshold varies widely from patient to patient, and this is the reason why the same brain injury results in seizures in one person and not in another.

It has been found that mental and physical activity in themselves tend to prevent seizures, that people with epilepsy do not need more rest than the normal persons, and that continued seizures have little effect on either the physical health or the mental abilities of the patient (except where seizures might result in accidental injury). Today the archaic laws that have contributed so much to the stigma associated with epilepsy are being repealed. The state of Wisconsin repealed the sterilization law and the laws prohibiting marriage of epileptics and set up a modern procedure permitting the issuance of driver's licenses to epileptics who had responded to modern medical treatment. There has been a growing recognition that epileptics do not require custodial care. Illinois and Wisconsin have dropped all reference to epilepsy from their commitment laws.

Normal living for the epileptic requires opportunities for self-support for the adult. Although many persons with epilepsy are employed today, unfortunately, because of the almost universal policy of not considering people with epilepsy for employment, they are usually hired without the employer's knowledge of their disorder. This policy continues to drive epilepsy underground, and its effect has been to make the employment policy with respect to epileptics the most unscientific and expensive one possible. It is expensive in these ways: 1. Epilepsy cannot be detected in the applicant by the personnel officer or the industrial health department. The epileptic, knowing through bitter experience that he will not be considered for employment when he truthfully states that he has been treated for epilepsy and his seizures have been controlled, omits this information. He may be employed in a job in which the conditions of work might result in a serious accident to himself or others, an accident that might be expensive for his employer. 2. The former employers of many able, experienced people with epilepsy have spent large sums training them for important positions. Epilepsy may begin at any time in a person's life. Too frequently the onset of seizures has caused the employer to discharge these workers, who have proved their value and whose potential worth to their employer has not been affected by their medical problem. 3. Forcing these potential workers to accept public or private assistance contributes to our ever-mounting cost for relief and public assistance. Industry pays a major part of these costs through taxation or contributions.

A modern program of employment of people with epilepsy would require a change in the policy with respect to hiring persons with epilepsy by all firms. This policy should be based on a recognition of the individual nature of the handicap in epilepsy, just as the employment policy has recognized this in the employment of other groups of handicapped persons. The services of anticonvulsive clinics and private physicians expert in the treatment of epilepsy should be used to eliminate or minimize the physical handicap in the individual worker; they should also serve as a source of accurate information on the extent of the physical handicap in the worker, so that proper placement can be made by the employer. Advantage should be taken of vocational rehabilitation services, including vocational training or retraining, so that the abilities of the epileptic worker can be best utilized by the employer. The final step should be the application of selective placement principles in job placement of the rehabilitated worker with epilepsy. The same program now applied to workers with other disabilities could be applied in epilepsy.

Employment of Diabetics.—Dr. R. E. Dolkart, assistant professor of medicine, Northwestern University, said that, according to the Metropolitan Life Insurance Company, there are about 250,000 diabetics in industry. This probably is a somewhat misleading figure because there are more men than women in the labor force but more women than men have diabetes, and because, for every known diabetic, there have been estimated to be four persons with latent diabetes. Sixty of the 63 companies replying to a questionnaire had no available statistics relative to time lost by their diabetic and nondiabetic employees. Only 39 companies, representing 286,622 employees, knew the number of diabetics (1,485) employed. Twenty of the 63 companies refused to employ diabetics. Of the 43 companies employing known diabetics, 33 restricted activities to nonhazardous work. Thirty-eight companies permitted employees to continue in their previous job classifications if they developed diabetes, whereas 24 companies reclassified them into restricted work categories. Although these data are most interesting, actual work performance records, absenteeism due to illness, and other data were available for only one company, which had 3,252 employees and 40 known diabetics. In their experience, the work records of diabetics were most satisfactory.

In preparation for this discussion, 12 industries with central offices in the Chicago area were selected at random and questioned as to their employment practices for diabetics. Four companies with 73,200 employees refused to hire diabetics in any category, although older employees who developed diabetes were allowed to remain in their jobs, though occasionally reclassified. Three companies, representing 132,409 employees, would employ no diabetics in "operating" categories but either did not examine or did not reject applicants in "nonoperating" categories. Although one railroad permitted a locomotive engineer who developed diabetes and required insulin to remain on his job, another railroad refused to allow union seniority regulations to deter it from enforcing job reclassification. Four companies, representing 149,000 employees, employed diabetics in all job categories, provided there was evidence that the disease was controlled. The 400,000 employees of one labor union were not subject to fulfillment of any set of physical standards in connection with their jobs, and health problems were not a consideration of union membership. Only one company, representing 75,000 employees, had any specific knowledge of either incidence or work performance by the diabetic. Incidence figures were only partially complete and were available for 16,236 of the 75,000 employee population. This smaller group contained 184 known diabetics. Records of absence due to illness of the diabetic group compared most favorably with the nondiabetic group, despite the fact that there was no way of determining whether the illness in the diabetics was due primarily to the diabetes. Whereas the diabetic was actually off work less frequently, if he was absent from work it was usually for a few days longer than the average worker.

It appears that many employment policies in operation are based on factors not directly related to the capabilities of the diabetic worker. Some companies maintain group insurance programs for all employees, either life, health and accident, or hospitalization insurance; many of the insurance carriers refuse to accept diabetics, and, as a result, they are rejected for employment. Many companies, in dealing with labor union representatives, have conflicts when confronted with seniority rights of an older worker who develops diabetes and needs to be reclassified to less hazardous employment. Many companies that maintain their own workmen's compensation benefits are afraid that they are placed in double jeopardy if an injury occurs in an employee with diabetes. What is needed is separation of the problems of the diabetics that are due to the disease and actual collection of the experience of industry, so that policies may be set by facts rather than allegations.

Radiation and Industry.—Dr. E. L. Walsh, medical director of the International Harvester Company (Chicago), said that special radiation hazards have necessitated a constant vigil on the part of industrial physicians to observe their toxic action on man and his environment. Since harmful radiations with which we are concerned can only be recognized by special instruments, many persons are inclined to ignore them. The effects of harmful irradiation are silent and insidious. Because this is so, one has to recognize potential sources and guard against excessive exposure. Man lives in a radioactive world. We are bombarded by cosmic radiation from outer space and radiations from the earth, the

ocean, and our fellow man. The food we eat and the air we breath, all have minute but measurable radiations. It has been estimated that a safe tolerance level for man per week is 300 milliroentgens (mr), or 0.3 r of whole body exposure. This amounts to 15 r per year.

Man receives annually from cosmic radiation 90 mr per year; from soil (1 gm. Ra per square mile) 200 mr per year; from sources within the body 26 mr per year; from adjacent persons in crowds 2 mr per year; and from fall-out following atomic tests 1 mr per year, or a total of about 320 mr per year. This however, is not man's only exposure. If many luminous dials are present, an airplane pilot may be exposed to 100 to 1,300 mc. per year, and a patient who undergoes an extensive series of x-ray examinations may be exposed to as much as 45 r. An average figure of 50 r in 25 years is generally accepted as a safe, normal exposure. The risk of further undesirable radiation is obvious. For this reason, dental and medical radiographs and such apparatus as fluoroscopes and shoe-fitting machines should all be controlled, properly shielded, and not used indiscriminately. It is agreed that all radiation from nuclear explosions in the fall-out areas is very low, and probably only one one-thousandth or less of a harmful level, even from the point of view of genetic damage. Continued experiments may alter this conclusion. Another area blamed on nuclear reactions is the presumed change in the world's weather pattern. Meteorologists do not believe there has been a change that cannot be accounted for on other more solid bases, because the thermal energy of the sun falling on 1 sq. mile of Nevada in a day supplies as much heat as two atom bombs; the energy released in a typical thunderstorm is equivalent to that of 13 bombs; and the power of any of the recent hurricanes is equivalent to that of all the atomic and hydrogen bombs thus far detonated. Man's efforts are puny, unimpressive, and inconsequential in the great pattern of the universe.

Commercial firms are planning reactors for municipal use in six sections of the United States, and one industrialist has seriously considered production of a small reactor about twice the size of a battery, which could be easily shielded and used as an energy source for domestic home appliances, or possibly radioactive strontium (Sr^{90}) bricks, which are easily shielded for heat. It is only a matter of time until power for aircraft, locomotives, and cars will be available. This is a fine tribute to our genius so long as all works well and experienced hands are in control, but we must proceed with caution if we are to avoid accidents due to human mishandling, ignorance, or mechanical failure; and the safe disposal of radioactive wastes has not yet been worked out. One area of utilization of spent fuel elements is that of food preservation. The practical application in this field alone could revolutionize the home. Not all foods react similarly, but preservation by radiation may become big business. It may outmode canning or freezing of meats, fruits, and vegetables. If the housewife will accept the notion of lettuce kept in a plastic bag on a shelf for 30 to 60 days, or meat kept in a transparent plastic wrapper at room temperature for months before serving, a great change of viewpoint will be required. Nutritionally, the quality of food is apparently uninjured. All foods thus far tested have undergone extensive testing before human trial. Animals have been fed flesh irradiated with gamma or x-rays in vivo as well as processed meats, and no deleterious effects have been noted. Trichina-infested pork is made edible, and, likewise, other food vermin, pests, and molds are eradicated. Insect eradication is possible in a few specific situations. For example, Westminister Abbey is troubled with death watch beetles, which are radiosensitive. Screw worms, termites, and other damaging insects might well be controlled by using Sr^{90} or radioactive cobalt (Co^{60}). Pharmaceutical houses are now successfully experimenting with dry cold sterilization of various drugs and biological products. Such methods are not yet accepted by the Food and Drug Administration, but in the future we may apply these methods in the hospital to the sterilization of bone, eye, and other "banked" materials.

Hearing Conservation Program.—R. B. Mass, hearing consultant for the Employers Mutual Liability Insurance Company (Wausau, Wis.), said that hearing-measurement stations are a logical starting point in a program of industrial hearing conservation. Usually these can be established in plants in large cities, where specialized medical service is available and where large numbers of workers make the expenditure practical. An otologist is obtained to conduct a complete program under the standards established by the American Academy of Ophthalmology and Otolaryngology. In Wisconsin, numerous smaller plants in cities under 30,000 population are being helped to develop facilities to conduct preemployment hearing measurements. The term "hearing measurement" is preferred to "test" because it eliminates some undesirable psychological connotations contained in the latter term that may encourage the man to feel that he must try devious methods to "pass" in order to qualify for employment. Actually, it is a measure of hearing acuity before the man comes on the job, just as we measure a man's height, weight, and blood pressure. Industrial physicians can be instrumental in getting management to appoint a hearing conservation committee to work out details of a conservation program. In small communities, the hearing-conservation committee may ask the cooperation of the local hospital, medical clinic, general physician, or vocational school. The local or neighboring otologist may be willing to supervise the hearing-measurement station and assist in training the audiometric technicians. Nurses and x-ray or laboratory technicians are obviously suited for this work, but alert responsive personnel from a general office can also become skilled technicians. According to the academy, about 12 hours of training time, including an hour or two of actual practice with the instrument, are required in order to obtain valid audiograms. There is much more to audiometry than the mere pushing of buttons and dialing. Preparation of the subject for the procedure and understanding individual differences are important. There is a psychology of obtaining responses from the individual, and the technician should have the ability to teach. Audiometry can be a boring routine job or it can be a highly interesting and challenging skill. Data are more accurate when more complete training programs are given. Usually it is necessary to include physics, anatomy, and physiology of the ear; care and operation of the instrument; the recording of audiographic data; and the techniques of obtaining responses from people.

Each new worker should be given an appointment before he starts on his job, and at this time the technician should administer the measurement. A copy of the original audiogram is mailed at the end of the working day to the employer, who should not fail to inform the man if the record indicates the need for otological consultation. In one state, audiometric data cannot be used as legal evidence unless the man is given the information regarding the results of his evaluation at the time it is made. To implement this vital step of referral, some industries pay the worker part or even all of the cost of the consultation. Figures seem to indicate that about 25% of the men seeking employment have hearing losses requiring medical attention. In other words, in the absence of an audiogram, these plants would be purchasing the previous employers' hearing losses in the case of 25 employees out of 100. One aspect of the program breaks down in actual practice, in that not enough men referred to the otologist actually consult him. One employer said of the program, "It is an inexpensive procedure and one which the new employee appreciates."

In occupations where exposure to harmful intensities of noise is a hazard, the problem is how to get the worker to wear a protective device, for it has been shown that a man who faithfully wears such a device is practically guaranteed against further loss through noise exposure. The average ear plug reduces noise from 20 to 30 db., but it does not interfere with signals or oral communications—in fact, it improves them. The difficulty is probably due to the fact that this program is new among workers, and anything new must be interpreted and reinterpreted. Probably the person best prepared to supervise ear protection programs is the nurse or first-aid man. This person might discuss ear protection at safety meetings and show the different types of devices. One plant had a meeting and the nurse suggested that six men try different types of ear protective devices and report back at the next meeting, which they did. It was reported that speech and warning signals could be heard easily with protection. One man who worked in an area in which the noise level was 100 db. said that when he got home after wearing ear protection he could enjoy his television set

much more because the ringing in his ears was gone. Such reports help to sell the programs. Some industries have learned that it helps to have a variety of ear protection equipment rather than to push one single type. If the worker has a choice, it makes the proposition that much more attractive.

I. C. Radcliffe, supervisor of the industrial hygiene unit, medical section, Ford Motor Company (Dearborn, Mich.), said that, if a company is planning a new building or manufacturing site, many dollars can be saved by using built-in noise-control features. The laying out of work processes, the location of noisy machines, and the segregation of as many workers as possible from noisy areas will do much to minimize hazards due to noise. Balancing noise reduction against costs of changes in work-processing must be evaluated for each individual factory. Examples of ways to reduce noise include (1) welding instead of riveting, (2) compression riveting instead of pneumatic riveting, (3) pressing or rolling instead of forging, (4) electrically operated tools instead of pneumatic tools, (5) low-speed-process machinery instead of high-speed machinery, (6) hot working of metals instead of cold working, and (7) belt drives instead of noisy gears. Experience in his own field will enable the plant and manufacturing engineer to recognize and avoid the use of noisy machines and processes when possible.

THE LEISURE CORNER

SCIENCE FICTION

Ever since Hugo Gernsback edited the first science fiction magazine in 1926, science fiction has attracted an active readership participation among scientific and technical people, many of them physicians, without the benefit of high-pressured ballyhoo. Although there is no generally accepted definition of the term, perhaps the one offered by Dr. Isaac Asimov, a prominent science fiction writer as well as an Assistant Professor of Biochemistry at the Boston University School of Medicine, is reasonably satisfactory. He defines science fiction as that branch of literature that is concerned with the impact of scientific advance on human beings. Science fiction frequently deals with the world of the future, a world whose social, economic, and political boundaries have been encompassed and molded by the expansion of scientific knowledge.

Science fiction reaches further back into the past than is generally realized. For many centuries—in fact, from the very beginnings of astronomy—man has pondered on his ability to reach the other planets of the universe. As a target for his interterrestrial dreams, the moon has provided a perpetual challenge to the would-be traveler of space. One of the earliest science fiction novels about an imaginary flight to the moon was written centuries ago in Latin by no less a person than Kepler, to whom astronomy and aeronautics owe almost as much as they owe to Newton himself. But it was the French writer, Jules Verne, who actually pioneered the modern science fiction form in his novel "From the Earth to the Moon," which was published in 1865, and its sequel "Round the Moon." Through the device of a gigantic cannon, Verne's fictional characters visited the moon during the course of their adventures, frequenting, among other places, its dark side. Nevertheless, it required the imagination and intellect of H. G. Wells at the turn of the present century to establish science fiction as a sound branch of contemporary literature. Wells was the first writer to remove stories about interplanetary travel from the superficial adventure realm and to emphasize its future sociologic implications. In one of Wells' stories about a trip to the moon, the emphasis is placed on the psychological tensions and strains prevalent among the participants of the flight. Many interplanetary stories deal with Earth man's conflict with the people or things inhabiting other planets. That such complications are most likely to ensue is seriously being considered by physicians, psychiatrists, engineers, and physicists currently engaged in planning extraterrestrial travel within the next decade or more.

As a result of the rapid accumulation of scientific knowledge, the approach to science fiction has become so varied that stories dealing with the future now fall into many categories. A major speculation occupying the attention of numerous scientific writers deals with the various effects of atomic power. When the atom bomb was dropped on Hiroshima in 1945, a new light was cast on the plausibility of science fiction. Actually, here was a weapon that seemed to emerge right out of the pages of science fiction. The background, at least from the viewpoint of science fiction, is an interesting one. Back in May, 1941, a well-known science fiction writer, Robert Heinlein, had a story published called "Solution Unsatisfactory," which was written before actual thought or work on the atom bomb had been started. In brief, some of the predictions made in the story were, startlingly enough, that the government of the United States would establish a project to consider seriously the development of a military weapon based on nuclear energy emanating from uranium-235; that a weapon capable of annihilating a large city would be produced; that a war then in progress would be terminated by the United States after the use of an atomic weapon on an enemy city; that other industrial nations would soon be able to duplicate the weapon in a relatively short time; that, as a consequence, offensive military power would so exceed defensive power as to leave the world open to devastation; that some form of world government would take place; and that there would be a sharp political struggle to determine whether the United States or the nations within the framework of the world government would control the latter. Although some of the other events predicted in the Heinlein story have not occurred, it is interesting to note that the author foresaw the position adopted by the United States in the official Manhattan Project in 1941.

Science fiction stories present a thousand possible futures, and there is no way of telling which story resembles the real future. Other forms of intelligence may exist on other planets or they may not, but one significant contribution science fiction can make, among others, is to acquaint readers with the concept that mankind is faced with a rapidly changing society attributable in great measure to the advent of modern technology. When this is taken into consideration, there still remains the fact that science fiction will frequently satisfy not only the inquiring mind but will also be able to quench the thirst for intriguing and imaginative tales of high adventure.

MEDICAL FILM REVIEWS

Still Going Places: Active Management of Disability in the Aged: 16 mm., black and white, sound, showing time 41 minutes. Produced in 1955 by Potomac Film Productions, Washington, D. C. Collaborators: Frederick D. Zeman, M.D., and Leo Dobrin, M.D., New York. Procurable on loan from Pfizer Laboratories, Division of Chas. Pfizer, Inc., Brooklyn 6, N. Y.

This picture demonstrates clearly, concisely, and with admirable balance what can be accomplished in rehabilitating elderly patients with such disabling conditions as postapoplectic hemiplegia with incontinence, fracture of the hip, severe rheumatoid arthritis, and Parkinsonism. The film, made at the Home for Aged and Infirm Hebrews of New York, is superbly constructed and directed to illustrate how such rehabilitation is accomplished. The balance, timing, and organization are exceptional, and the importance of hope, motivation, will power, and persevering patience are gently but firmly revealed. Several patients are followed from the time of their admission, when patient and family alike are almost resigned to a future of vegetative passivity, to discharge several months later with a reestablished capacity for self-care and even help of others. Every case clearly demonstrates the basic principle of active management of impaired motor functioning, which is that, "by promoting movement, one preserves the ability to move." Clinical procedures are shown in sufficient detail to satisfy any nonprofessional audience and to stimulate professionals to greater perseverance in their efforts. The primary effect of this

film is inspirational. Instruction, though secondary, is very effective. Newly disabled or recently stricken elderly patients and their despairing families will find here the stimulus to pursue the arduous efforts required in rehabilitation, for hope is quietly kindled without fanfare or melodramatic sentimentality. There is no discordant note of cheap glamour or misleading promises. This well-told story is realistic, logical, firm, and yet very gentle. It should be seen by all those directly responsible for the care of the elderly and/or chronically disabled. Lay groups that are collectively concerned with the problems of chronic illness, such as the boards of directors of hospitals or homes for the aged and church or fraternal groups, can profit greatly from seeing this film. Their comprehension of the need to extend such active rehabilitative services can but lead to more vigorous sponsorship of appropriate facilities. Doctors, residents, medical students, nurses, and all others ancillary to a comprehensive program of active therapy will find both pleasure and profit in viewing this film.

Radical Pelvic Evisceration and Bilateral Groin Dissection for Pelvic Cancer: 16 mm., color, sound, showing time 35 minutes. Prepared by George T. Pack, M.D., and Theodore R. Miller, M.D., New York. Produced in 1952 by Sturgis Grant Productions, New York. Procurable on loan from E. R. Squibb and Sons, Division of Olin Mathieson Chemical Corp., 745 Fifth Ave., New York 22.

The purpose of this film is to show the surgical procedure performed in an attempt to cure a 46-year-old woman with a cancer involving the rectovaginal septum, anterior wall of the vagina, and base of the urinary bladder, with bilateral metastases to the inguinal lymph nodes. The first portion of this operation involves an abdominal incision from one anterior superior spine to the other, transversely across the pubis, with the patient in extreme dorsal extension. Bilateral ureterostomies are carried out, and a specimen containing bladder, rectum, uterus, tubes, ovaries, and lymphoid tissue is completely mobilized, remaining attached only at the pelvic floor, before the abdominal wound is closed, a colostomy being constructed through its midportion. Two parallel skin incisions over the mons veneris are then made and a bilateral inguinal dissection done. After this procedure, the contents of both groins are brought down into the field. Two superficial inguinal incisions are projected downward, the contents of the ischiorectal fossa are dissected medially, and the pelvic cavity is entered and the rectum pulled down. After the levator muscles are divided, the whole specimen, consisting of the anus and rectum, the vulva, vagina, uterus, the broad ligaments, the bladder, and contents of both groins, is removed. The patient is shown six months postoperatively, and she seems to be quite comfortable. The ureterostomies and colostomy are exhibited, and their functioning is satisfactory. The legend clearly and succinctly states that this was "an attempt to cure" this patient. Whether or not these radical procedures are superior to the removal of just the primary growth will only be answered by the test of time. There can be no doubt that such procedures have a definite place in the surgical attack and armamentarium. The technique is excellent, and the exposure is ideal. This film can unreservedly be recommended for surgeons interested in radical pelvic evisceration.

Lung Cancer: The Problem of Early Diagnosis: 16 mm., color, sound, showing time 27 minutes. Produced in 1954 by Audio Productions, New York, for the American Cancer Society and the National Cancer Institute. Procurable on loan or purchase ($134) from the American Cancer Society, 521 W. 57th St., New York 19, or state health departments and divisions of the American Cancer Society.

This film begins by showing a patient at a clinic in which an x-ray study showed small pulmonary shadow seven months prior to onset of symptoms. Subsequent x-ray studies showed enlargement of the shadow, until atelectasis of that portion of the lung had been produced. Thus, emphasis is placed on the delay in the diagnosis in this patient. The magnitude of the problem of cancer of the lung is brought out by the increasing incidence of this lesion. By the use of drawings and models, as well as the illustration of pathological material, various aspects of the problem of early diagnosis and planning of management are brought out. Instructions for the physician first seeing the patient as well as the patient himself are discussed. A short section of the film is devoted to an operation, illustrating and discussing the essential features. The film is not intended to show operative technique. It ends with a discussion of the important problem of early diagnosis and treatment by Drs. Overholt, Graham, and Ochsner. The photography is excellent, and the organization and sequence of the plan of the film are good. This film is highly recommended in the teaching of undergraduate and graduate students of medicine as well as for practicing physicians, and it would be especially useful for county and state medical society meetings.

Community Health in Action: 16 mm., color, sound, showing time 23 minutes. Presented by the National Health Council. Produced in 1955 by and procurable on rental or purchase ($170) from Sam Orleans and Associates, Inc., 211 W. Cumberland Ave., Knoxville 15, Tenn.

This picture quite clearly depicts a reasonably good community health program and shows the common functions of a well-organized health department. It also mentions several of the voluntary agencies consistently found in the community and suggests the relationship between these health agencies and practicing physicians and their medical society. The story is primarily one of preventive rather than therapeutic medicine, and, as such, it will be useful in promoting the development of a local public health administration, in suggesting possible interrelationships between voluntary and governmental health agencies, and in indicating to citizen groups the areas in which their community could be improved. This would be a suitable film for adult groups interested in civic betterment, for civic organizations, particularly those interested in promoting new or improved local public health administrations, and for voluntary health agencies interested in interagency relationships. In the field of formal education, it could be used in high school and college classes in health, sociology, and various other social sciences touching on community organization.

Back to Life: 16 mm., black and white, sound, showing time 33 minutes. Sponsored by the Bureau of Mental Health and the Pennsylvania Department of Welfare. Produced in 1954 by and procurable on rental ($6) or purchase ($125) from Al Kane Productions, Inc., 1411 Walnut St., Philadelphia 2.

The purpose of this film is to show how treatment in mental hospitals is designed to restore patients to their jobs, families, and communities. It illustrates the role of the psychiatrist, psychologist, social worker, occupational therapist, and rehabilitation counselor in the teamwork of mental hospital treatment and demonstrates that persons discharged from mental hospitals as recovered can be useful and reliable employees. This film is scientifically accurate and is recommended for all groups dealing with mental illness and mental health. It would be particularly good for industrial management groups and would also be suitable for lay groups especially interested in the problem of community organization for rehabilitation of mental patients.

Total Right Hepatic Lobectomy: 16 mm., color, sound, showing time 22 minutes. Prepared by George T. Pack, M.D., and Richard D. Brasfield, M.D., New York. Produced in 1955 by Sturgis-Grant Productions, New York. Procurable on loan or purchase ($125) from E. R. Squibb and Sons, Division of Olin Mathieson Chemical Corp., 745 Fifth Ave., New York 22.

This film demonstrates a technique for removal of the entire right lobe of a liver containing a malignant neoplasm. It is stressed that the left lobe is macroscopically free of cancer and that no visual metastases are demonstrable. The patient is shown three months postoperatively. Recovery has been uneventful, and the T-type incision demonstrated has healed by first intention. Until such time when simpler or chemotherapeutic methods are available to attack the cancer problem, these massive procedures must be given serious consideration and study. The technique herein depicted is clearly and expertly demonstrated. Some doubt might be raised as to the advisability of removing a wedge of costal arch for the relief of pain, since patients rarely complain postoperatively without the removal of a segment of this arch. It would have been well to insert a diagram to help clarify the placement of the interlocking sutures over the liver dome. The photography and narration are excellent. The film can be recommended highly to those who are interested in the technique of total right hepatic lobectomy.

MEDICAL LITERATURE ABSTRACTS

INTERNAL MEDICINE

Cranial Artery Vasculography and (Extra) Cranial Headache. M. M. Tunis. Canad. M. A. J. **74:**185-192 (Feb. 1) 1956 [Toronto, Canada].

This report presents pathophysiological data obtained with a relatively new method of recording hemodynamic changes in the arteries lying outside of and adjacent to the skull. This method has been useful in defining a variety of headache mechanisms and also in studying the action of several chemical agents used in certain types of head pain. When the intensity of the headache was modified by giving these chemical agents, an altered contractile state in the (extra) cranial arteries was recorded. The method for recording cranial arterial pulse wave contours employs a glycerin-filled rubber sphere that protrudes from an airtight, lightweight aluminum capsule with an escape valve. The unit is called a pellotte, and two or more of these may be placed bilaterally on the intact cranial skin overlying the external carotid arteries, their major subdivisions, or the occipital arteries. Movements of the arterial wall under the pellotte are converted into electrical impulses, and arterial pulse wave contours or "cranial artery vasculographs" are recorded. Thirty-five hundred records were obtained from more than 130 patients with recurrent craniofacial pain. The brachial arterial pressure varied only insignificantly in all these normotensive patients during 3 to 14 months of observation and with administration of the investigated chemical agents. All the patients studied had demonstrable sustained alteration of the contractile state of certain (extra) cranial tissues (skeletal muscle, blood vessels) associated with their daily recurrent headaches. Dimenhydrinate in intramuscular doses of 50 to 75 mg. terminated the acute headache in 80% of 56 patients in whom vasculographic records gave evidence of dilatation and/or distention of the temporal arteries associated with the temporal pain. Triethanolamine trinitrate biphosphate in oral doses of 2 to 5 mg. was effective in 80% of 80 patients with headache whose vasculographic records gave evidence of constriction of the temporal artery and contraction of the temporal muscle. A group of 28 patients with headache refractory to the above chemical agents was characterized by extreme variability on the vasculographic records from day to day. These patients reported marked diminution in the frequency and intensity of their head pain in association with the administration of the dihydrogenated ergot alkoloids. The foregoing data seem to imply that, in certain cases, additional criteria other than the vasculographic data will be required for selecting patients suitable for the application of the chemical agents.

Coronary Thrombosis and Air Travel. H. Whittingham. Practitioner **176:**179-180 (Feb.) 1956 [London, England].

There is little risk for a patient who has recovered from even a severe attack of coronary thrombosis in undertaking a short flight of up to four to five hours' duration if he can walk 100 yards or climb a dozen steps without symptoms and provided that the journey is made in a pressurized aircraft with a "cabin altitude" no greater than 8,000 feet. The patient should remain at rest throughout, and oxygen should be available. If the patient's electrocardiogram shows only slight changes and if he can walk at a reasonable pace for half a mile without symptoms, he should be fit to make a flight of 10 to 12 hours' duration, provided an altitude of 8,000 feet is not exceeded and he remains at rest. In the case of long journeys entailing flying for two to three days, punctuated by a few transit stops of about an hour each, it might be advisable to stay over for a day or two at selected places en route. Travel should always be in a pressurized aircraft. Consideration should be given to the altitude of the patient's destination, for if it is over 5,000 feet, walking, after a long flight at about 8,000 feet with its lowering of oxygen tension, tends to affect adversely those who have defective circulation in the cardiac musculature. When a patient with coronary disease intends to travel by air, especially for many hours, it is advisable to consult the medical department of the airline so that arrangements can be made for the patient's care en route. These arrangements should include attention to toilet before embarkation, the provision of a seat near the lavatory to minimize moving about in the aircraft, the availability of an adequate supply of oxygen in case of need, and assistance on and off the aircraft and with baggage. On long flights those who have had a severe attack should occupy a sleeping berth, a sleeperette, or an invalid couch. If the patient has not previously travelled by air, it might be advisable to give a sedative to lessen nervous tension.

Cardiovascular Actions of Chlorpromazine with Particular Reference to Peripheral Vascular Disease. R. S. Duff, J. W. R. McIntyre and N. G. P. Butler. Brit. M. J. **1:**264-266 (Feb. 4) 1956 [London, England].

The effects of an intravenous infusion of chlorpromazine (Largactil) on the general circulation and on the blood vessels of hands, feet, and forearms of five healthy persons and of five patients with peripheral vascular disease (arteriosclerosis, thromboangiitis obliterans, and Raynaud's disease), were studied. A specific amount of the drug, based on the person's body weight, was given. Repeated measurements of blood flow in one or more extremities were obtained by intermittent venous occlusion plethysmography. The temperatures of other extremities were recorded by thermocouples, and the oral temperature was taken at intervals. The blood pressure in one arm was determined regularly, and the heart rate and rhythm were recorded by electrocardiography. Measurements and recordings were made before the drug was given and were repeated regularly for one and a half to four hours after its administration. Increases in the volume of blood flowing through the skin of the hands and the feet of healthy persons were observed after the drug was given. In patients with extensive disease of peripheral vessels little or no increase in cutaneous blood flow was observed, but in some the circulation through a comparatively unaffected region in the forearm was augmented. The heart rate, after some fluctuation, tended to remain slightly increased; a slight drop in systemic blood pressure occurred consistently. The oral temperature regularly fell a little; by contrast, the vasodilatation of the extremities was associated with increased warmth of the hands and feet and raised digital temperatures. Chlorpromazine is capable of dilating blood vessels in the muscles and skin of some patients with vascular disease of the extremities, increasing the circulation through vessels retaining some flexibility. The drug has an advantage over several other agents used for treatment of peripheral vascular disease in that it causes little increase in cardiac output but achieves its effect by preferentially dilating the vessels of the extremities at the expense of other regions. This property would especially recommend the trial of chlorpromazine in vasospastic states. In view of the risk of toxic effects such as jaundice occurring after prolonged administration of chlor-

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The place of publication of the periodicals appears in brackets preceding each abstract.

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promazine, the use of the drug should be limited to more acute conditions such as arterial thrombosis or embolism. Chlorpromazine might appropriately be used to determine what circulatory benefit might be expected from surgical sympathectomy.

Therapy of Rheumatic Fever: Comparison of Results Obtained with Salicylates, Cortisone or Corticotrophin, Phenylbutazone, and Combination of Sodium Salicylate, Para-Aminobenzoic Acid and Cortisone. L. Kalliomäki. Acta med. scandinav. **152:**473-478 (No. 6) 1955 (In English) [Stockholm, Sweden].

Of 72 patients with rheumatic fever treated at the medical clinic of the University of Turku, Finland, 22 were given salicylates, 19 cortisone or corticotropin, 17 phenylbutazone, and 24 sodium salicylate combined with *p*-aminobenzoic acid and cortisone. During the first two weeks of treatment the most abrupt fall in the erythrocyte sedimentation rate occurred in the group of patients receiving combined treatment with sodium salicylate, *p*-aminobenzoic acid, and cortisone. The slight rise of the erythrocyte sedimentation rate (rebound phenomenon) that occurred in this group of patients when the administration of cortisone was discontinued after an average period of 19 days was considerably less marked than that in the patients treated with cortisone or corticotropin alone when administration of these drugs was discontinued. After the third week of treatment the erythrocyte sedimentation rate decreased with equal rapidity in the patients treated with phenylbutazone or salicylates and in those who received the combined treatment. The duration of the febrile period in the patients receiving phenylbutazone and those receiving combined treatment was approximately the same, with the difference that phenylbutazone had a more even antipyretic effect. Up to the second week of treatment a rise occurred in the leukocyte count in 7 of the 14 patients who were given combined treatment; this rise was not observed in the patients treated with phenylbutazone. Neither phenylbutazone nor the combined treatment prevented the recurrence of the disease. It was not possible to study the effect of the different methods of treatment on the duration of carditis. Evaluation of the primary results obtaind with the various methods of treatment indicates that they are so similar in therapeutic action that the choice of therapy can be determined by factors such as the tolerance of the patient, complications, ease of administration, and expense involved.

Myocarditis in Viral (Epidemic) Hepatitis. O. Saphir, G. D. Amromin and H. Yokoo. Am. J. M. Sc. **231:**168-176 (Feb.) 1956 [Philadelphia].

This study is based on a reexamination of the clinical records and autopsy findings in four instances of viral (epidemic) hepatitis. Although their viral nature cannot be proved, it seems clear that the histopathological changes in the liver in these cases agree well with the concept of viral hepatitis. Three of these patients died after a relatively short course of the disease. Two had electrocardiographic changes that in retrospect can well be interpreted as having been caused by the myocarditis. The changes in the myocardium were characterized by minute foci of necrosis and a more diffuse serous inflammation. In three of these four patients the bundle of His was involved, with necrosis of isolated fibers, hemorrhage, and an acute inflammatory exudate. The purpose of this report was to point out the existence of myocarditis in epidemic hepatitis. It would seem that electrocardiographic studies are indicated in every patient with viral hepatitis, as well as in those with other viral diseases.

Curative Sleep Produced by Drugs in Patients with Diseases of the Stomach. H. Petzold. München. med. Wchnschr. **98:** 123-125 (Jan. 27) (In German) [Munich, Germany].

In 52 patients, 29 with gastritis, 13 with ulcer of the stomach, and 10 with duodenal ulcer, curative sleep of four days' duration was produced by the combined administration of chlorpromazine (Megaphen) and N-(2'-dimethyl-2'-methyl) ethylphenothiazine (Atosil) hydrochloride or by the combined administration of Pantopon (a proprietary preparation of the soluble hydrochlorides of the total alkaloids of opium) and scopolamine. In some patients Hydergine (methanesulfonates of hydrogenated ergotoxic alkaloids) was substituted for chlorpromazine. On the third and fourth day of treatment with Pantopon and scopolamine the patients were given single doses of 5 cc. of a 10% solution of magnesium ascorbinate producing sleep of four to five hours' duration. The patients were placed on a diet of fruit juices or tea, but did not receive any solid food. Forty-two patients were free of complaints after the sleep, six were improved, and four were unchanged. The complaints consisted of feeling of pressure or pain after ingestion of food or of pain caused by pressure during examination. Four patients became free of complaints only two to three days after the termination of the sleep. Improvement was of such a degree that the patients with gastritis were discharged 6 days after the curative sleep and those with ulcers 10 days after the curative sleep. Roentgenograms did not show any abnormal findings in 20 patients. The roentgenograms of 17 patients showed improvement. Five gastric ulcers and five duodenal ulcers had become smaller in size. The ulcers that had become smaller after the sleep completely disappeared after 10 days. These findings suggest that in most patients sleep of four days' duration apparently produced more rapid healing. Follow-up showed that three patients with gastric ulcer and one with duodenal ulcer remained free of complaints for more than nine months. Twenty patients had relapses within seven months. Relapses were more frequent than after treatment by diet, but the patients' complaints were slight.

Acute Pancreatitis Complicating Diabetes Mellitus. E. T. Bossak and R. H. Joelson. A. M. A. Arch. Int. Med. **97:**201-207 (Feb.) 1956 [Chicago].

When the authors observed the occurrence of acute pancreatitis in three hospitalized patients known to have diabetes, they reviewed the hospital records from 1936 to 1954 of all patients in whom a final diagnosis of acute pancreatitis had been made on the basis of clinical and/or autopsy findings. Among 103 hospitalized patients with acute pancreatitis, 5 additional instances of its association with preexisting diabetes mellitus were found. Diabetes had been present for from six months to 18 years. Five patients had required insulin during the period immediately prior to the onset of acute pancreatitis. The age of the patients ranged from 20 to 62 years. All the patients were women. Of 250 nondiabetics with pancreatitis, 53.6% were women. Six of the eight patients died, whereas only 25 of 98 nondiabetic patients with severe acute pancreatitis died. The extremely high mortality in diabetic patients has been observed in all reports and cannot be correlated with the anatomic lesions, which are not particularly severe. The statement has been made that "when a diabetic patient is attacked by acute pancreatitis the diagnosis is grave indeed." The low percentage of correct clinical diagnoses is striking. Of the six fatal cases reported here, pancreatitis was suspected in none before death. This is partially due to the lack of definitive abdominal symptoms and signs. While abdominal pain was noted by six of eight patients, abdominal tenderness, diffusely located in the upper abdomen, was described in only four instances, and rebound tenderness was elicited in only two of these patients, both of whom survived. However, there was no patient who did not have either abdominal pain or some abdominal findings on examination. Diabetic coma was present in four of the six patients who died and in one of the two who survived. The possible presence of acute pancreatitis should be considered when patients complain of abdominal pain during episodes of diabetic acidosis. Four of the eight patients had renal involvement. Oliguria or anuria occurred in three patients in diabetic coma and was associated with renal tubular lesions. Acute pyelonephritis was observed in a fourth patient who died. The authors suggest a possible vascular etiology for the occurrence of acute pancreatitis in patients with known diabetes mellitus. The diagnosis of acute pancreatitis should be considered in diabetics who present coma resistant to therapy, with abdominal pain or tenderness, shock, or oliguria.

The Effect of Sodium Glutamate on Hepatic Coma. L. T. Webster and C. S. Davidson. J. Clin. Invest. **35:**191-199 (Feb.) 1956 [New York].

Webster and Davidson investigated the effect of sodium glutamate administered intravenously to 11 patients with cirrhosis of the liver. Five were comatose and six showed signs of spontaneous impending coma. In two of the latter, signs of impending coma had been reinduced by ammonium salts. The authors found that glutamate, given to 8 of 11 patients with cirrhosis by intravenous injection in daily doses of 23 gm., failed either to affect favorably the course of spontaneous impending hepatic coma and coma or to prevent the onset or exacerbation of impending coma induced by ammonium salts. Much larger quantities of intravenous sodium glutamate had a temporary beneficial effect on the coma of two and possibly three other patients with cirrhosis. Peripheral venous blood ammonia nitrogen concentrations remained or became normal during the therapy. A clinical method for evaluating the depth of hepatic coma or impending coma was found necessary and was developed. The authors realize that, although results obtained with sodium glutamate were discouraging, the criteria set up for its evaluation were rigid. Its use may be more encouraging in other situations, i. e., hepatic coma precipitated by ammonium salts, a high protein intake, gastrointestinal hemorrhage, and possibly other factors. Good results have been observed in so-called meat intoxication of patients with portacaval shunts and might also be found in patients with chronic liver disease and extensive collateral circulation, in whom a somewhat similar situation exists.

Eosinophilic Granuloma of the Lung. M. Virshup and A. Goldman. J. Thoracic Surg. **31:**226-237 (Feb.) 1956 [St. Louis].

A 15-year-old boy who was entirely asymptomatic and appeared to be in excellent health was admitted to the Diseases of the Chest Hospital of the City of Hope Medical Center in May, 1953, with a presumptive diagnosis of bilateral advanced pulmonary tuberculosis because of extensive infiltration throughout both lung fields discovered the previous December during a mobile unit chest x-ray survey. The past history included measles and an unexplained episode of fever associated with pain in the left hip at the age of 5 that lasted intermittently for one year. The film taken on admission showed apparent progression of the condition in spite of the fact that the patient had been kept on modified bed rest at home for two months. Heavy root shadows and scattered mottling by soft nodular densities and areas suggestive of multiple small cystic areas or cavities were visible from the apex to the base on both sides. The patient was placed on strict bed rest and an antibiotic regimen consisting of 1 gm. of streptomycin, twice weekly, and 12 gm. of *p*-aminosalicylic acid and 150 mg. of isonicotinic acid hydrazide daily. Repeated attempts to recover tubercle bacilli failed, and an exploratory thoracotomy and lung biopsy were eventually performed for the purpose of establishing a definite histological diagnosis. The pleural cavity was found to be free of adhesions or fluid. Small cystic areas containing air were scattered over the surface of the lung, and on palpation shot-like nodules were felt scattered diffusely throughout the parenchyma. Histological study of biopsy specimens taken in wedge fashion from the upper and middle lobes established the diagnosis of eosinophilic granuloma of the lung. The patient's postoperative convalescence was uneventful. A complete bone survey was made after the establishment of the diagnosis, but it failed to disclose any abnormalities. Further combined antibiotic therapy, this time with penicillin, streptomycin, and Aureomycin, followed by a course of erythromycin, was given, and the last x-ray film, made 19 months after the disease was first noted, showed some slight decrease in the extent of the infiltration. The patient was discharged and was leading a normally active life 20 months after the discovery of the disease. The extreme rarity of primary pulmonary eosinophilic granuloma, which is shown by the fact that only four other cases seem to have been reported, makes it impossible to forecast the probable outcome of the disease. The pathological basis of eosinophilic granuloma, Hand-Schüller-Christian disease (lipogranulomatosis or normocholesteremic xanthomatosis), and Letterer-Siwe's disease (reticuloendotheliosis or histiocytosis) has been shown to be fundamentally the same. The remarkable clearing of the process of Letterer-Siwe's disease achieved in some patients with antibiotic therapy was the basis for its use in this case. Natural remissions, of course, may occur, and the disease sometimes remains stationary for long periods of time; in general, however, a progressively severe course may be anticipated, with increasing pulmonary fibrosis and cystic transformation of the lung and terminal cor pulmonale.

Choice of Therapy in Hay Fever. H. Arnoldsson. Nord. med. **55:**1885-1887 (Dec. 22) 1955 (In Swedish) [Stockholm, Sweden].

Specific hyposensitization for two or three years was applied in 400 of 522 patients with hay fever; 75% of the patients were free from symptoms or greatly improved. The effect was good in 81% of the 110 patients treated with antihistamines. Ten of 12 patients with severe cases who were given cortisone were free from symptoms. Antihistamines and cortisone are only symptomatic agents and do not give lasting results, but they are valuable adjuncts in the therapeutic armamentarium, not least because of greater ease of administration. Treatment with cortisone is indicated only in severe cases where specific treatment and antihistamine therapy are without avail. When the daily maintenance dose is reduced to 25 mg., side-effects of cortisone are rare. Specific treatment is time-consuming and often trying for the patient, but it maintains its position as the most effective method of treatment. In 60 out of 82 patients the good effect was found to continue three years after treatment. Perhaps in many cases combination therapy is to be recommended.

Hepatic Coma: Clinical and Biochemical Aspects. S. Ragland Jr. Virginia M. Month. **83:**14-18 (Jan.) 1956 [Richmond, Va.].

Ragland emphasizes that patients with severe liver disease who are exposed to large amounts of ammonia-containing substances, whether they enter the diet as protein or as ammonium chloride medication, are subject to hepatic coma. An understanding of biochemical processes is necessary for the solution of this problem. Ammonia is related to both the formation and consumption of glutamic acid. Glutamic acid appears to be uniquely important in brain metabolism, and it is thus possible that ammonia poisoning could be due to altered glutamic acid levels. The importance of glutamate may be related to its role in potassium transport in the brain, as Davies and Krebs have suggested. During the active transport of the potassium ion into brain cells, glutamate is taken up against a gradient mol for mol. This indicates that glutamate may carry the cation across the membrane. If ammonia decreases the potassium by decreasing the glutamate, this might account for the impaired brain function observed clinically in so-called ammonia poisoning, which is indistinguishable clinically from hepatic coma. The author cites reports by other investigators on favorable effects obtained in hepatic coma with the intravenous injection of glutamic acid or by the oral administration of glutamate. He recalls the case of a woman with hepatic cirrhosis who was stuporous but who became alert after 24 hours when she was given 5 gm. of sodium glutamate three times a day. She again became stuporous when this medication was discontinued. This procedure was repeated several times. She could be sent home as long as the medication was continued. The author believes that there is evidence to support further investigation and use of glutamic acid or its salt glutamate in the treatment of patients with hepatic coma in conjunction with the well-established routine therapy.

The Pain of Peptic Ulceration. A. W. M. Smith. Quart. J. Med. **24:**393-407 (Oct.) 1955 [Oxford, England].

Three theories have emerged with regard to the causation of ulcer pain: the acid theory, the motility theory, and the theory that the inflammatory reaction around the ulcer is the cause of the pain. The author describes studies on the role of acidity and motility. He used a balloon-kymograph technique to investigate the relationship between pain, motility, and acidity in 28 patients, all of whom had symptoms of peptic ulceration. The majority had a demonstrable ulcer crater or ulcer deformity.

Spontaneous attacks of pain occurred in 17 of the patients. No constant relationship was found either between acidity and pain or between motility and pain. A 0.5% solution of hydrochloric acid was injected into the stomach of 19 of the patients, and pain developed in 15 after an average delay of 8.8 minutes in those with gastric ulcer and 7.2 minutes in those with duodenal ulcer. Injection of hydrochloric acid into the duodenum of five patients produced pain in each after an average delay of three and a half minutes. When 30 to 60 ml. of a 9% solution of sodium bicarbonate was injected into the stomach or duodenum on 24 occasions, pain was relieved after an average delay of nine minutes. The production of pain by hydrochloric acid and its relief by sodium bicarbonate could not be correlated with changes in motility. The effect of antispasmodic drugs on pain was observed in eight cases. There are many objections to both the acidity and the motility theories, and it is obvious when considering the results that the sensitivity of the ulcer is much more important than any particular level of acid or degree of motility. Only by emphasizing the local inflammatory reaction and the sensitivity of the ulcer can one attempt to explain the pain of peptic ulceration satisfactorily.

Studies on Agammaglobulinemia: VI. Hemostasis in Patients with Agammaglobulinemia. P. G. Frick and R. A. Good. Proc. Soc. Exper. Biol. & Med. **91:**169-172 (Jan.) 1956 [Utica, N. Y.].

Because of the existing controversy about the site of synthesis of gamma globulins, it was considered of interest to determine the concentration of the presently known clotting factors, and, wherever possible, to evaluate the adjustment of these factors in response to stressful situations in patients with demonstrated inability to synthesize gamma globulin. Complete tests of hemostasis were performed in four children with congenital agammaglobulinemia and three adults in whom the agammaglobulinemia was probably acquired. With one exception all patients were males. During the course of study, homologous serum hepatitis developed in one adult, and he died in hepatic coma. In two children the fibrinogen concentration changed during a febrile episode. Otherwise, the tests were carried out during a state of clinical well-being. An elevated blood platelet count was observed in five of the seven patients. No abnormalities in plasma clotting factors were found. The data presented are consistent with the following conclusions: (1) none of the plasma coagulation factors is a gamma globulin, (2) agammaglobulinemia is probably the result of an isolated deficiency in protein synthesis, and (3) the deficiency of gamma globulin synthesis in these patients does not involve the liver but rather depends on an anomaly of protein metabolism existing elsewhere in the reticuloendothelial system.

Gamma Globulin Deficiency and Weakness of Defense Against Infections: Clinical Contribution to Hypogammaglobulinemia and Agammaglobulinemia. H. Stobbe. Ztschr. ges. inn. Med. **10:**1040-1046 (Nov. 15) 1955 (In German) [Leipzig, Germany].

Four men and five women with plasma cell myeloma who were admitted to the first medical university clinic of the Charité in Berlin, Germany, had recurrent bronchitis and bronchopneumonia. Of the nine patients, five had β-plasma-cell myeloma and four did not have a pronounced plasma cell myeloma reaction constellation, but the presence of plasma cell myeloma was revealed at autopsy. Electrophoretic studies revealed a reduced gamma globulin level in the serums of these patients, and in some of them the gamma globulin values were extremely low. The hypogammaglobulinemia must be the cause for the pronounced weakness of the defense power against infection that was observed in the patients with plasma cell myeloma, as it was in those with the nephrotic syndrome or in patients with deficient nutrition. An additional case of primary agammaglobulinemia is reported in an 18-year-old boy who after the age of 9 years had had recurrent infections of various types. His 14-year-old brother was healthy, but he too had hypoproteinemia with a reduced gamma globulin level. The agammaglobulinemia in the 18-year-old boy was paralleled by a deficiency of plasma cells in the bone marrow, so that in this patient aplasmocytosis was considered to be the morphological manifestation of weakness of the defense power. A report by Swedish workers (an abstract of which appeared in THE JOURNAL **153:**981 [July 16] 1955) on the occurrence of agammaglobulinemia in two brothers suggests that the disease is a "biochemical malformation" according to Garrod's concept and similar to the classic hemophilia in which the antihemolytic globulin is missing. Substitution therapy with 50 to 80 cc. of gamma globulin (10 cc. daily) at regular intervals of three to four weeks was practiced in this patient. The gamma globulin level was not increased after the injection, but an improvement in the patient's defense mechanism was evidenced by a marked rise in temperature, by an increase in the number of leukocytes from 13,200 to 41,450, and complete recovery from his bronchopneumonia. The gamma globulin injections were continued, and the patient showed constant increase in weight and longitudinal growth despite constant agammaglobulinemia.

SURGERY

Persistent Right Bundle-Branch Block Due to Pulmonic Valvotomy and Infundibulectomy. C. F. Kittle, E. M. Santos and E. G. Dimond. Am. Surgeon **22:**80-85 (Jan.) 1956 [Baltimore].

Bundle-branch block was observed by Kittle and associates to develop during and to persist after valvulotomy or infundibulectomy in 4 of 31 patients undergoing a Brock procedure, 17 for tetralogy of Fallot and 14 for isolated pulmonic stenosis. Three of the four patients had tetralogy of Fallot, two with infundibular and one with valvular stenosis. The other patient had an isolated pulmonic valvular stenosis. No evidence of right bundle-branch block was noted before operation in these four patients. The electrocardiogram taken during operation or soon thereafter showed right bundle-branch block that has persisted as long as these patients have been observed. In one patient, slightly more than two years have elapsed since operation. Speculating on why such a change developed when the obstructing lesion was excised or incised with subsequent relief of symptoms and concomitant lowering of the right ventricular pressure, the authors suggest that the most ready explanation is that the surgical trauma damaged conduction fibers in the interventricular septum either directly or indirectly by edema, ischemia, and fibrosis sufficient to cause permanent changes in conduction. Since most of the conduction bundle branches lie in the posterior portion of the interventricular septum, this explanation may not be valid. Recently, in the creation of interventricular septal defects experimentally in dogs by punching out a core of tissue, right-branch block was encountered in 20 of 25 animals. It does not seem probable that either placement of the purse-string suture or the right ventriculotomy is cause enough for this electrocardiographic abnormality, since this trauma is confined to the anterior wall of the right ventricle. These patients have had no deleterious symptoms from their right bundle-branch block.

Cancer of Breast: Importance of Symptoms. E. F. Remy Sola. Prensa méd. argent. **42:**3002-3006 (Sept. 30) 1955 (In Spanish) [Buenos Aires, Argentina].

Forty women with cancer of the breast were observed in the Department of Pathology of the Breast of the Rivadavia Hospital of Buenos Aires. The majority of the patients were between the ages of 40 and 60 years, and all but four were married. Twenty had passed menopause. Twenty-five had had one or more children. Five patients in this latter group had had suppurative mastitis and two had had fissures of the nipple during lactation. Thirty-seven patients reported for consultation because they had noted a nodule in the breast. The patients reported at a period from three months to more than one year after the appearance of the nodule. The nodule was palpable in all. It was in the right breast in 20 women and in the left breast in 20. The nodule was located in the superior outer quarter of the breast in 24 women and in other regions in the remaining patients. It was circumscribed in 23, diffuse in 16, and encapsulated in one woman. The diameter of the nodule varied between 3 and 10 cm. Abnormalities of the breast were observed in 23 women. They consisted of retraction of the nipple or changes in the

elasticity, color, or texture of the skin. The prognosis was found to be related to the size of the tumor. Tumors of a diameter of more than 3 cm. had already spread to the regional lymph nodes. Fixation of the tumor to the pectoralis major muscle with axillar adenopathy indicates a cancer in an advanced stage. Supraclavicular metastases were observed only in recurrences after a mastectomy.

Treatment of Multiple Polyposis of the Small Intestine. E. P. Vary. Am. J. Surg. **91:**152-158 (Feb.) 1956 [New York].

Vary is concerned with the polyposis or adenomatosis of the small intestine, which was established as a separate entity by Peutz in 1921 and brought to more general attention by Jeghers in 1944 and 1949. The chief characteristic is the presence of hundreds of adenomatous polyps of the small intestine, sometimes associated with polyps of the stomach or colon. Some look upon this disease as polyposis of the entire intestinal tract; Peutz's description of pharyngeal polyps lends some credence to this belief. The polyps vary in size from 1 mm. to 3 cm. Usually the larger polyps have long thin stalks, traction on which accounts for the tendency to intussusception. There are two forms of the disease: a true hereditary type and a sporadic type. The hereditary type, sometimes referred to as the Peutz-Jeghers syndrome, is associated with melanin spots, which may be located around the mouth or on the lips, palate, labia, anus, or digits. Symptoms include occasional diarrhea with or without occult blood in the feces, secondary anemia, and epigastric distress probably due to incomplete recurring intussusception. Since single polyps are commonly the cause of intussusception, one must bear in mind the possibility of multiple polyposis so that this diagnosis may be confirmed or disproved at operation. One of the patients observed by the author had been operated upon three times for intussusception before the true nature of the disease was suspected. The author describes a method of direct attack on the polyps. He makes a longitudinal incision on the antimesenteric side of the intestine approximately 25 cm. distal to the ligament of Treitz. Four soft Allis forceps hold this incision apart while a long (8 in.) soft Allis forceps is thrust as far as possible up the lumen and the jaws opened against the antimesenteric side. With the tip of the finger of the other hand or with a closed hemostat or thumb forceps, the intestine is indented between the jaws of the forceps, which are then closed on the full thickness of the intestine. Traction on the forceps and further manipulation turns the small intestine inside out to full view for inspection, biopsy, and removal of the polyps by snare, cautery, knife, or scissors. The maximum length of intestine thus exposable seems to be about 20 to 25 cm. As the limit of extroversion is approached, the prolapsed portion will become cyanotic and will fill and stretch the incision. One must be careful not to exceed this point. When the intestine is replaced, the distal portion of the intestine may be prolapsed through the same incision in a like manner, thus covering a maximum of almost 3 ft. for each enterotomy incision. The postoperative course of patients so treated has been smooth. The method is also useful, to a limited extent, in examining the colon for polyps, ulcers, and cancer implants. Inspection of portions of the colon and small intestine may help in determining the adequacy of mucosal resection for carcinoma or ulcers, or both.

Pantothenilic Alcohol in Prophylaxis and Treatment of Postoperative Paralytic Ileus. G. Sclausero. Gazz. med. ital. **114:**291-293 (Dec.) 1955 (In Italian) [Milan, Italy].

Sclausero gave pantothenilic alcohol (Bepanten) to 126 patients in whom major operations had been performed on the abdomen and the pelvis. Early postoperative intestinal paresis was present in 92 of the patients. The others were given the preparation as a prophylactic with the aim of preventing the onset of paralytic ileus. No other drug was administered. The alcohol was given in an aqueous solution in doses of 500 mg., preferably by the intravenous route. According to the patient's need, as many as four such doses were given in 18 hours. If no effect was apparent after the fourth dose, the therapy was suspended. One dose was sufficient to restore intestinal motility in 30 patients, whereas 29 patients required two doses, and 23 three or four. One additional injection was given after the intestinal paralysis had been controlled. The therapy had no effect in 15 patients. The second group of 34 patients who received the alcohol as a prophylactic were given two 500 mg. doses intravenously 24 and 36 hours after the intervention. Peristalsis was restored rapidly and early and without tympanites in 16 patients, and after 48 hours in 12 patients. Six patients had to be given other enterokinetic drugs. Despite the extremely poor general condition of these patients, paralytic ileus was not observed. Apparently the therapy was responsible for restoring the peristaltic activity of the intestine. In no instance did the administration of pantothenilic alcohol cause abdominal pain, nausea, vomiting, hypotension, or profuse sweating. This alcohol is the preparation of choice for patients with intestinal atony and is a useful adjuvant in the treatment of grave postoperative paralytic ileus.

Rapid Method of Cytological Diagnosis of Malignant Tumors During Surgical Operations. H. G. Alexeyev. Vyestnik khir. **76:**94-103 (Sept.) 1955 (In Russian) [Moscow-Leningrad, U. S. S. R.].

The fastest methods of histological diagnosis can give an operating surgeon an answer concerning malignancy of the preliminary specimen within 20 minutes of the time he removes it (10 to 12 minutes for the procedure and the remainder for such things as transport). The rapid method is not so accurate as regular histological investigation. Cytological procedures are described that require only three or four minutes and are just as accurate as rapid histology: there was a 2% margin of error in a series of 150 patients. Furthermore, cytological investigation requires no highly specialized equipment and can be practiced in hospitals having no clinical laboratory. Facilities may be set up right next to the operating room. The methods allow the study of certain types of material inaccessible to histology, such as punch-biopsy specimens, scraped-off matter, and pus. If a diagnosis of malignancy is confirmed, the proper surgical intervention can be performed without delay, with obvious advantages to the patient.

On the Use of Hypertonic Solutions of Honey in Surgery. A. Medici. Minerva chir. **10:**1342-1348 (Dec. 31) 1955 (In Italian) [Turin, Italy].

Medici studied the therapeutic effect of a hypertonic solution of honey in 56 patients, 20 to 76 years of age, before and after they were operated on for (1) hepatobiliary conditions, (2) arteriosclerotic and myocardiosclerotic conditions, and (3) toxemic states. The patients were given at least 10 intravenous injections of 10 cc. of the solution at a 20 or 40% concentration. The injection was painless and did not cause signs of intolerance. Unlike hypertonic solution of dextrose, especially concentrated solutions, the honey solution injected into the same vein repeatedly did not cause sclerosis of the vessel wall. No chemical or pharmacological incompatibility was observed in the patients who received the solution with other preparations (methionine, protein lysates, digitalis, and vitamins). In patients with hepatobiliary conditions, the honey solution not only was a good adjuvant to the standard therapy but, because of the presence in it of a cholinergic factor, it also exerted a vasodilating action and was capable of facilitating the restoration of glycogen deposit in the liver cell. In patients with myocardial disease, the solution, together with the other specific preparations of which it potentiated the action, contributed to the improvement of the blood flow through the myocardium and improved the postoperative course. In patients with toxemic states it checked the carbohydrate deficiency and increased the resistance of the organism against the infectious process and shock. It had a marked synergistic effect when given together with the adrenocortical hormone and vitamins C and B_1. Hypertonic honey solution gives better results than equal amounts of isotonic or hypertonic dextrose solution. In addition to an energetic principle, the former solution supplies also a cholinergic factor that brings about vasodilation, which is especially beneficial to the coronary circulation. It also brings about a better utilization of carbohydrates by making it possible to restore glycogen deposits in the liver and myocardium.

Vascular Complications of Diabetic Patients: Gangrene. J. Elizondo Cerdas, R. Rodríguez and J. Solis. Rev. invest. clín. 7:481-502 (Oct.-Dec.) 1955 (In Spanish) [Mexico, D. F.].

The records of 1,066 patients with diabetes mellitus who had been observed in the Hospital de Enfermedades de la Nutrición of Mexico City were reviewed. Vascular complications in the leg were observed in 136 patients. Forty-two of the patients had gangrene of the feet or of the lower segments of the leg and required mutilating operations. The total number of operations performed was 74, with from 2 to 9 operations per patient. The average time of hospitalization was 75 days. Death occurred a few hours after the operation in three patients. Four patients died some time after the operation from cardiovascular disease and one from hypoglycemia. Late results could not be verified because the patients did not report after having been discharged from the hospital. Diabetic gangrene calls for radical surgical treatment. The disease generally occurs in patients between the ages of 50 and 60 years. It is more frequent in patients in whom the disease is of long duration. The first two toes are the most frequently involved in gangrene. The disease is frequently associated with myocardial infarction, nephropathy, hypertension, and infections. It occurs in patients with moderate diabetes mellitus. Medical treatment is of no value. Amputation is indicated after failure of nonmutilating surgical treatment. Although the type of amputation is determined by the extent of gangrene, amputation below the knee is the ideal type. The results are satisfactory, although the patient is left an invalid. The prognosis for the life of the patient is good, especially since the discovery of antibiotics. As a rule, the need for insulin greatly diminishes after the operation, and hypoglycemia may occur.

NEUROLOGY & PSYCHIATRY

Management of Intracranial Aneurysms of the Anterior Communicating Artery. W. P. Williamson and C. E. Brackett Jr. Am. Surgeon 22:100-107 (Jan.) 1956 [Baltimore].

Twelve consecutive cases of aneurysm of the anterior communicating artery are reported. The location of intracranial aneurysms plays a great part in determining operability, and one of the most difficult sites to challenge the neurosurgeon is that of the anterior communicating artery. In this unique location, the aneurysm arises from or replaces a vessel usually only a few millimeters long, and often incorporates or encroaches upon one or both anterior cerebral arteries. It usually feeds from both carotid circulations, so that ligation of either carotid artery in the neck would allow it to fill from the opposite side. It is not settled whether aneurysms of the anterior communicating artery should be subjected to surgery. Eight of the 12 patients presented were operated upon, with three deaths; and 4 were left alone, with two deaths. This series is too small to lead to any conclusion other than that aneurysms of the anterior communicating artery are treacherous, whether operated upon or not. Hypotensive anesthesia was used in four patients, and in three of them it did not prevent rupture of the aneurysm as the dissection to expose it was begun. Of the eight aneurysms exposed surgically, five ruptured, and three of these patients died. Good surgical exposure of the aneurysm with complete isolation of both anterior cerebral arteries proximal and distal to the lesion must be accomplished in order to destroy the lesion without occluding either anterior cerebral artery. It also is apparent that, if the lesion ruptures, this type of deliberate exposure is difficult, if not impossible. It was evident in this small series that rupture of the lesion during the dissection, before adequate exposure is obtained, is to be expected, and that hypotensive anesthesia is not certain insurance against this disconcerting occurrence. The answer to this problem lies in total temporary occlusion of all blood flow to the lesion during its isolation and subsequent placing of definitive clips or ligatures on the aneurysm in a bloodless field. This concept has been suggested by Campbell and Burkland, who used a silk noose, without hypothermia, in dealing with aneurysms of the middle cerebral artery. Both anterior cerebral arteries can be readily exposed through a unilateral frontal craniotomy and temporarily occluded before the lesion itself is visualized. This guarantees that there will be no rupture or bleeding during the dissection of the lesion. Hypothermia seems appropriate to allow more time for the definitive treatment of the aneurysm.

The Treatment of Tic Douloureux. D. Miller. M. J. Australia 1:11-12 (Jan. 7) 1956 [Sydney, New South Wales].

Permanent relief from trigeminal neuralgia (tic douloureux) will be gained only by interruption of the affected nerve proximal to the ganglion. Peripheral interruption, either by injection or by nerve avulsion, though immediately effective, usually lasts only a few months, or at most a year or two, and the pain then recurs. The great disadvantage of this is that the addition of months or years to the age of the patient may have made more radical treatment more dangerous. The author treats by injection only those patients who refuse operation or who could not tolerate a general anesthetic. There are but few patients who have been told that they can be cured, but there are practically none who have not been warned and terrified, often even by doctors, that operation, if not fatal, results in paralysis of the face, loss of the eye, and intellectual disaster. The experienced neurosurgeon must admit that a transient facial palsy is a possibility, although unlikely, and that the eye deprived of the sensory nerve may give some trouble and will need great care, but neither of these possibilities is sufficient reason for declining effective relief from pain. The great advantage of the operation is that it is performed under view, is painless and can be performed on the most aged and feeble, can be selective as to the parts of the nerve affected, and should preserve the motor part of the nerve. There are two operative approaches to the sensory root. The temporal route, as perfected by Frazier, carries a minimum risk to life and a minimum risk of morbidity. In the author's series of 200 cases, there has been no operative death. A suboccipital approach was introduced by Dandy and has some technical advantages; but it has the disadvantage that it is intradural, necessitates cerebellar retraction, does not eliminate risks to the facial nerve or the eye, and carries a higher mortality rate. It is now generally reserved for cases in which for some reason the temporal route is impracticable. Some years ago Taarnhøj of Copenhagen described an operation that avoids division of the nerve and seeks to bring about cure by decompressing and clearing the nerve root as it crosses the apex of the petrous temporal bone. If this stands the test of time, it will be the ideal treatment.

The Risk of Poliomyelitis Infection Among Exposed Hospital Personnel. P. F. Wehrle. Pediatrics 17:237-246 (Feb.) 1956 [Springfield, Ill.].

The purpose of this study was to determine the extent of inapparent infection with poliomyelitis virus among the personnel of the Baltimore city hospitals during the season of most frequent occurrence of poliomyelitis. During the study year, 1954, a total of 128 patients in the acute stages of poliomyelitis were hospitalized, 63% with demonstrable paralysis. Poliomyelitis viruses were isolated from individual fecal samples of 74 patients. Of these, 52 were type 1 and the remainder type 3. About two-thirds of the personnel who volunteered for the study were assigned to the poliomyelitis service. The student nurse group lived in the nurses' home on the hospital grounds, while the majority of the other personnel lived outside the hospital. Initial blood samples were collected from these personnel in June before the hospitalization of patients with poliomyelitis, and as soon after arrival as possible in the case of those subsequently reporting to the hospital for duty. In personnel leaving the hospital during this period, the second sample was obtained at the time of departure. Exposure to poliomyelitis infection in the personnel was measured by both the number of patients with acute poliomyelitis cared for and the duration of service on the wards up to a maximum of eight weeks. All serum samples were centrifuged, and the clear serum obtained was stored at −30 C until tested. Paired serums were tested simultaneously in serial twofold dilution from 1:4 to 1:4,000 in tissue cultures of trypsinized monkey kidney. Doses of all three types of poliomyelitis virus were used. It was found that, although nearly one-third of the personnel were presumably susceptible to the types of

poliomyelitis virus present in the patients and an additional and slightly smaller proportion had antibody in low titer, there was no evidence of transfer of infection under these circumstances, as measured by increases in neutralizing antibody titer. The striking difference between the rate of infection among members of households of patients with poliomyelitis and among hospital personnel is believed to be due chiefly to a decrease in the infectiousness of poliomyelitis by the time of hospitalization. The usual hospital isolation techniques appear adequate to prevent transmission of virus from the patient to susceptible personnel under the conditions of hospital exposure.

A Winter Outbreak of Poliomyelitis in New York City: The Complement-Fixation Test as an Aid in Rapid Diagnosis. J. L. Melnick, J. R. McCarroll and D. M. Horstmann. Am. J. Hyg. **63:**95-114 (Jan.) 1956 [Baltimore].

The authors describe investigations carried out in an outbreak of poliomyelitis occurring in midwinter in an apartment house in New York City and involving three paralytic cases. Blood samples were obtained from 124 of the 135 residents and tested for the presence of both complement-fixing and neutralizing antibodies against all three types of poliomyelitis virus. Rectal swabs or stool specimens were also obtained from 108 persons and tested for the presence of virus. Type 1 poliomyelitis virus was isolated from the stools of 23 persons, all of whom were children or the parents of infected children. Type 1 complement-fixing antibodies were demonstrated in the serums of 44 individuals, 24 of whom were children under the age of 5 years. Only four of the adults giving evidence of infection by the presence of complement-fixing antibodies were from households without children. The presence of children appeared to be the principal determining factor in the spread of infection. Of the susceptible parents of infected children, all but one became infected. Neutralizing antibody determinations showed that most persons not infected had antibodies against type 1 virus and were therefore probably "immune" at the time of the current exposure. Eliminating these nonsusceptible individuals gave infection rates of 50% for all adults in the apartment house and 95% in parents of infected children. These results emphasize the extreme contagiousness of poliomyelitis virus when introduced into a group of susceptible individuals. They also emphasize the role of close contact. The advantages of the complement-fixing test for rapid, easy confirmation of recent infection, clinical or inapparent, are also illustrated. Children tended to show a more strongly monotypic complement-fixing response than adults, so that tests in this age group are of more value in determining the type of virus present in the outbreak. Almost twice as many infections in this outbreak were discovered by the complement-fixing test as by virus isolation, indicating its value in tracing patterns of infection.

Hypothermia and Interruption of Carotid, or Carotid and Vertebral Circulation in the Surgical Management of Intracranial Aneurysms. E. H. Botterell, W. M. Lougheed, J. W. Scott and S. L. Vandewater. J. Neurosurg. **13:**1-42 (Jan.) 1956 [Springfield, Ill.].

Twenty-two patients, 15 men between the ages of 16 and 58 and 7 women between the ages of 30 and 50, with ruptured intracranial berry aneurysms, and one 58-year-old woman with an unruptured aneurysm of the right internal carotid artery were operated on at the neurosurgical division of the Toronto General Hospital. Five patients had supraclinoid aneurysms of the right or the left internal carotid artery, 2 had aneurysms at the bifurcation of the right and the left internal carotid artery, respectively, 10 had aneurysms of the right or the left anterior cerebral–anterior communicating artery complex, and 5 had aneurysms of the middle cerebral artery. The interval between the rupture of the aneurysm and the surgical intervention varied from four hours to 47 days. Hypothermia, which was used to minimize the effects of anoxia, was induced in three stages. The first drop in temperature of approximately 1 C (1.8 F) resulted from preoperative sedation with chlorpromazine, N-(2-dimethylaminopropyl) phenothiazine (Phenergan), and meperidine (Demerol) hydrochloride. The second stage occurred concomitantly with the cervical dissection, during which the patient was in a hypothermic bath on the operating table and his legs, groins, and lower abdomen were covered with crushed ice. During the third stage the bath was filled with ice water covering the legs and trunk to about the nipple line. The patient was intubated with the aid of topical anesthesia and light nitrous oxide–trichlorethylene anesthesia. Temporary occlusion of the great vessels of the neck bilaterally in varying combinations by bulldog clamps and digital compression was employed when made necessary by bleeding from the aneurysm or an adjoining artery. This procedure was considered of great value in 11 patients in whom the surgical field, obscured by blood despite efficient suction, became relatively dry; accurate definition and clipping or ligation of the neck of the aneurysm thus became possible, and continuity of the artery was preserved. Three of the patients with ruptured aneurysms and the patient with the unruptured aneurysm died. Hypothermia was directly responsible for the death of the last patient from irreversible ventricular fibrillation. Of the three patients with ruptured aneurysm, extensor rigidity developed preoperatively in one with a supraclinoid aneurysm and massive intracerebral clot, and the brain-stem hemorrhage revealed by autopsy probably occurred at that stage. One patient with an aneurysm of the middle cerebral artery died of cerebral swelling, secondary to softening in the distribution of the middle cerebral artery that probably antedated the operation. In the third patient thrombosis had occurred in both anterior cerebral arteries with extensive cerebral softening. Of the 19 patients who survived the operation, results were excellent in 16, i. e., they were well and had no neurological deficit; results were fair in one patient, with normal mentality and speech but disabling neurological deficit. Results were bad in two patients; one was markedly retarded mentally, had left lower facial weakness, spastic paralysis of the left leg, and urinary incontinence; the other patient remained totally aphasic, with a right hemiplegia. The electrocardiographic findings, the usefulness of the electroencephalogram, and the safe maximum duration of bilateral occlusion of common carotid or carotid and vertebral arteries are emphasized. The authors believe that the described technique has improved the results of surgery of intracranial aneurysms in their patients.

Myofascial Pain Syndromes. A. E. Sola and R. L. Williams. Neurology **6:**91-95 (Feb.) 1956 [Minneapolis].

Although patients with the myofascial syndrome may present a wide variety of clinical symptoms including pain, stiffness, limitation of motion, tremors, weakness, and manifestations of autonomic nervous system dysfunction, the chief complaint is usually pain, which may vary in quality and intensity from a low grade discomfort to a type of pain that is severe and incapacitating and frequently associated with a deep, burning, aching sensation. Many workers observed in their patients small abnormally sensitive areas of tenderness in muscle or other connective tissue. On pressure or other local stimulation these sensitive points appeared to trigger the myofascial pain syndrome. The trigger points were found repeatedly in the same place in the involved muscles and caused pain distributions in the same area in hundreds of patients. The authors made two observations that militate in favor of the presence of a physiological disturbance rather than a functional one. Stimulation with negative galvanic current in the area of the trigger point produced discrete areas of erythema over the trigger point. Exploration with a neurodermanometer, which measures skin resistance when altered by sweating, revealed a dramatic deflection of the needle as the trigger point was crossed. The deflection was invariably indicative of an area of decreased skin resistance. These two observations suggest that there is an alteration of vasomotor activity in the area of the trigger point, which is rather sharply localized and irritable. The trigger points can occur in any muscle. Several of the more common trigger points in the upper trunk, i. e., in the levator scapulae and the infraspinatus muscles, and in the lower trunk, i. e., in the quadratus lumborum, tensor fascia lata, and anterior tibialis muscles, and the pain syndromes they produce, are discussed. Myofascial pain syndromes are so common that they should not be overlooked when one is faced with a pain problem that does not fit familiar clinical patterns. In 1,000 patients in whom hypersensitive trigger points were found at

Lackland Air Force Base Hospital in San Antonio, Texas, the use of sodium chloride solution for injections of the trigger points proved to be of both therapeutic and diagnostic value. One possible explanation is that the solution exerts pressure on the site of the trigger point and adjacent pressor receptors, which in turn effect an alteration of the vasomotor activity in the area. Disturbances including local or segmental variations in skin temperatures and sweat patterns, reflex loss of joint range, tremors, and edema decreased or disappeared after the sodium chloride injections. If no relief is obtained from a series of several injections, further diagnostic procedures are indicated to rule out the presence of another lesion.

Alteration of Copper Metabolism in Chlorpromazine-Treated Cases. H. Azima and A. Richman. A. M. A. Arch. Neurol. & Psychiat. **75:**163-166 (Feb.) 1955 [Chicago].

The combination of extrapyramidal signs and liver damage, that is, of symptoms similar to those of hepatolenticular degeneration (Wilson's disease), have been observed in some patients treated with chlorpromazine. Since there has been evidence that the copper metabolism is altered in hepatolenticular degeneration, the authors ascertained the plasma copper level of 25 psychiatric patients before and at the end of the first, third, and fifth weeks of the treatment with chlorpromazine. Urinary amino acids were investigated in patients who showed extrapyramidal signs. Liver function tests were performed in all cases. A control group consisted of 25 psychiatric patients who received other forms of treatment. Twelve of the chlorpromazine-treated patients showed an abnormal increase in plasma copper; among them five manifested extrapyramidal signs. In two, these signs were quite marked; they included cogwheel rigidity, tremor, loss of associated movements, and mask-like facies. The theoretical aspects of the data are discussed in regard to any similarity to hepatolenticular degeneration.

Preliminary Report on 18 Months' Experience with Chlorpromazine at the Yankton State Hospital, Yankton, South Dakota. C. Yohe. South Dakota J. Med. & Pharm. **9:**59-62 and 74 (Feb.) 1956 [Sioux Falls, S. Dak.].

Chlorpromazine was given to 728 patients with various mental disturbances. The drug was given to newly admitted patients as well as to the chronically ill. The treatment was begun with a daily dose of 200 mg. given orally. This dose was gradually increased during the succeeding weeks, if it seemed necessary. In a few cases daily doses as high as 2,000 mg. were given, but the great majority of the patients received between 200 and 400 mg. per day. The results were unpredictable with small doses, and occasionally small doses were followed by exacerbation. In most of the patients who left the hospital (slightly over 50%), treatment with chlorpromazine was continued after discharge (usually with 200 mg. per day). Particular emphasis is placed on the results obtained in the newly admitted patients. This group included 185 who were less than 60 years of age, and of these, 156 or about 84% could be discharged. Improvement rather than discharge was hoped for in the patients who were in the wards for the chronically disturbed; in these wards occurred some of the most dramatic successes of chlorpromazine therapy. Conditions in these wards are now greatly changed. Television sets, potted plants, new drapes, and glassware are not being destroyed or even damaged. Patients are not locked up in seclusion, all patients wear clothes, and attendants no longer complain of torn shirts and broken glasses or wrist watches. In fire drills, women patients who had been among the most severely disturbed file out of the building in an orderly manner, stand around watching the ladders and hoses, and then quietly return to their ward. This would have been impossible before the era of chlorpromazine therapy. There has been no progress in about 18% of the patients, most of whom are chronically apathetic and withdrawn, and some of whom have chronic organic psychoses. One of the chief gains from this therapy is the effect upon public opinion about mental illness. Now that much mental illness can be treated like other illnesses, i. e., with medicaments, the stigma may disappear, and mental patients will be accepted back into the fold like other sick people.

Effect of Chlorpromazine on Convulsions of Experimental and Clinical Tetanus. R. E. Kelly and D. R. Laurence. Lancet **1:** 118-121 (Jan. 21) 1956 [London, England].

Kelly and Laurence believe that a drug or a combination of drugs that will abolish the muscle spasms of tetanus without affecting respiration or abolishing consciousness is needed. One of the authors gave both old and new drugs to rabbits with experimental tetanus. Chlorpromazine, injected intravenously in doses of 1 mg. per kilogram of body weight, abolished the muscle spasm of rabbits for a minimum of 27 minutes and a maximum of two hours. Promethazine also abolished tetanus, but only in a dosage of 4 mg. per kilogram of body weight and for a shorter time (less than one hour). With these results in mind it was thought justifiable to attempt to control human tetanic convulsions with chlorpromazine alone. The authors present the history of a 2½-year-old boy who was hospitalized with generalized tetanic convulsions. He had continuous trismus and frequent opisthotonoid spasms. He was given 15 mg. (about 1 mg. per kilogram of body weight) of chlorpromazine intravenously and within 10 minutes had fallen into a sound sleep with his mouth relaxed for the first time in three days. Only one severe spasm occurred in the next three hours. It was decided to continue with chlorpromazine alone and to increase the dose if necessary. An intravenous drip was maintained, and through this doses of chlorpromazine were given every two to five hours, according to the severity of the convulsions. The aim was to control the convulsions at a level at which they did not exhaust the child unduly, rather than to achieve complete relaxation. That chlorpromazine was effective against the convulsions was demonstrated by their regular cessation or mitigation 20 to 30 minutes after a dose and their regular recrudescence some time later. The child was always easily rousable from sleep. Respiration was unaffected. Phenobarbital was given to control restlessness as the chlorpromazine was withdrawn. Chlorpromazine was given for 16 days in daily doses ranging from 75 to 330 mg. and after that was gradually reduced to 30 mg. The child had a slow convalescence. The authors reported this case not because they thought that the outcome of one case can provide conclusive evidence of the value of a drug but because it was a treatment chosen in the light of experimental evidence. They believe that if his condition had been uncontrolled this child would have died; but no doubt he could also have been treated successfully with thiopental (with the concurrent disadvantage of unconsciousness), with neuromuscular-blocking drugs (with the necessity for continuous anesthesia as well as artificial respiration), or with mephenesin (which is short-acting and has the disadvantage of having to be given in large volumes of fluid by vein to avoid the hemolysis that strong solutions cause). Chlorpromazine was used since it offered a possibility of controlling the convulsions without any of these disadvantages. The authors conclude that chlorpromazine is capable of controlling tetanus in man but offer no opinion on what place it may have in routine treatment. If the effect reported here is confirmed in other patients this drug might then be tested in combination with other drugs of known action against tetanus—e. g., barbiturates, mephenesin, and promethazine.

GYNECOLOGY & OBSTETRICS

Observations on Ovarian Disgerminoma with Report of Cases. G. Moggian. Riv. ital. ginec. **38:**389-410 (No. 5) 1955 (In Italian) [Bologna, Italy].

An ovarian disgerminoma was found in five patients, 9 to 20 years of age, who had irregular or scanty menstruations or amenorrhea of varying duration, sometimes with hypoplasia of the uterus. None of the patients exhibited signs of true or spurious hermaphrodism. The tumor was found in the 9-year-old patient when an appendectomy was performed. The symptoms—a feeling of heaviness and pain in the lower abdominal quadrants and in some instances constipation—did not suggest the exact clinical diagnosis even though laboratory tests were also made. The presence of an ovarian neoplasm that varies in size, consistency, and shape was established when surgical intervention was performed. Macroscopic and microscopic studies were

made, and all the tumors showed a striking resemblance to seminoma of the testicle. Ovarian disgerminoma is a malignant tumor, and, as such, it can spread either by the lymphatics or the blood vessels or to the adjacent organs by contiguity. Some authors advocate simple removal and conservation of the reproductive function, others advocate radical surgery supplemented by roentgen therapy. Moggian is in favor of radical surgery even when the tumors are small, easily removable, and seem to have an intact capsule. Roentgen therapy to the entire abdominal region and the possible routes of metastatic diffusion should follow.

Neuroplegics and Bromocalcium Therapy in the Analgesia of Labor. F. Gasparri and E. Ogier. Riv. ostet. e ginec. **10**:772-784 (Nov.) 1955 (In Italian) [Florence, Italy].

The results that followed the combined administration of neuroplegics and Calcibronat (a preparation obtained from the molecular combination of calcium bromide and calcium lactobionate) to 80 women, 50 of them primiparous, in labor are reported. The patients received from 0.1 to 0.2 gm. of Nembutal at the onset of labor and, after a 2-to-3-cm. dilatation was reached, they were given, by intravenous drip administration over a 10-minute period, a solution containing 10 cc. of Calcibronat, 100 mg. of Demerol, 25 mg. of Fargan, and 25 mg. of Largactil. This was followed by the intravenous administration of 500 cc. of a dextrose solution that contained also 10 cc. of Calcibronat, 50 mg. of Demerol, 25 mg. of Fargan, 25 mg. of Largactil, and, when necessary, an extract of the posterior lobe of the pituitary in the standard dose. Flat, small, and thin needles were used, and they were introduced into a vein of the back of the hand to allow the patient freedom of action in view of the fact that a more or less marked psychomotor agitation may often appear in the initial phase of analgesia. The mother's arterial pressure and pulse rate, the fetal heart beat, and the intensity, duration, and interval of uterine contractions were checked constantly. A hypnotic effect was obtained in 95% of the women. The analgesic effect was excellent in 30%, who did not recall having experienced pain, and it was more than satisfactory in 60%. The uterine contractions diminished somewhat in 55% of the patients, but this negative effect was controlled by the administration of Pituitrin. The antispasmodic action of the solution shortened the period of dilatation. However, less cooperation on the part of the patient during the expulsion stage resulted in a prolongation of the second stage, and forceps had to be applied in 15 primiparous and 4 multiparous women. The fetal heart beat increased at the onset of therapy but returned to normal shortly thereafter. Only 4 of the 80 infants were drowsy at birth, and maneuvers of resuscitation had to be used in another, but no death occurred in the neonatal period. Collateral effects on the general and cardiovascular conditions of the women were not observed. Sometimes slight changes in their pulse rate, arterial pressure, and breathing appeared in the initial phase of the treatment, but they were transitory. The authors conclude that this method is useful especially for anxious and excited women provided it is carried out by specialized personnel in a well-equipped institution.

Repeat Cesarean Section: Analysis of 162 Repeat Cesarean Sections in 143 Cases as to Sequelae and Impressions Concerning Validity of the Initial Sections. R. A. Bartholomew, E. D. Colvin, W. H. Grimes and others. Obst. & Gynec. **7**:137-144 (Feb.) 1956 [New York].

Of 143 women who underwent repeat cesarean section, 19 of whom had two repeat cesarean sections, providing a total of 162 repeat sections for study, rupture of the cesarean uterine scar occurred in 7 (4.3%). Rupture of the scar was imminent at the time of the repeat cesarean section in three (1.8%), and in six women (3.7%) the deficiency in healing of the initial incision was sufficient to suggest potential rupture of the scar. Postoperative adhesions occured in 62% of the patients. In one patient, intestinal obstruction occurred on the third postoperative day, requiring laparotomy to release a kink in the bowel. Definite symptoms and x-ray evidence of obstruction occurred one month after cesarean section in another patient, but obstruction was relieved by use of the Miller-Abbott tube. There was no maternal mortality. For the initial cesarean sections, the uncorrected stillbirth and neonatal death rates were 1.6 and 3.2% respectively; the premature stillbirth and neonatal death rates were 26 and 17.3% respectively. For the repeat cesarean sections performed one to two weeks before the expected date of labor, the stillbirth and neonatal death rates were 1.3 and 3.2% respectively; the premature stillbirth and neonatal death rates were 16.6 and 16.6% respectively. Repeat cesarean section, considering the low frequency of maternal complications in contrast to initial cesarean sections, should have a more favorable stillbirth and neonatal death rate; however, it proved to be as high as that of the initial cesarean sections. Unanticipated prematurity and the unphysiological manner of birth by cesarean section may predispose to atelectasis and thus may combine to increase fetal risk in the theoretically more favorable repeat sections. The indication for the initial cesarean section was judged to be nonvalid in 27% of the patients. To better the prognosis for subsequent childbearing, more effort should be made to popularize the low segment type of cesarean section and discourage use of the classical type. Considering the uncertainty of controlling the healing of a cesarean section incision and recognizing possible weakness of the scar, restriction rather than expansion of cesarean section continues to be a worthy objective. It must be remembered that the low primary mortality of cesarean section of the present day is no measure of the ultimate mortality in the later reproductive history of these patients. Enlightenment of the laity as to future risks incurred in childbearing subsequent to cesarean section may serve to create greater demand for preoperative consultation and adequate appraisal.

Male and Female Trichomoniasis: Diagnosis and Oral Treatment. G. Perl, A. F. Guttmacher and H. Raggazoni. Obst. & Gynec. **7**:128-136 (Feb.) 1956 [New York].

Women with the complaint of discharge or other symptoms of vulvovaginitis were referred from the gynecologic and obstetric outpatient departments of the Mount Sinai Hospital, New York, to a vulvovaginitis clinic where the following diagnostic procedure was used: The patient was advised not to douche for three or four days before her visit. With a sterile cotton-tipped applicator a small amount of discharge was taken from the vulva, the external urethral orifice, or most often from the pool of the posterior fornix and was placed in a small vial containing 1 cc. of Trichomonas diluent. A drop was examined microscopically. This wet-smear method is simple and reliable and can be carried out in the office; it has resulted in 90% accuracy as compared with culture methods. A second sterile applicator dipped in the vaginal discharge was placed in the culture tube. Simplified trypticase serum medium containing trypticase, cysteine, maltose, Difco agar, and human serum all adjusted to a pH of 6 was used. Two hundred fifty units of penicillin per cubic centimeter and 1 mg. of streptomycin per cubic centimeter were added to inhibit bacterial growth. The culture tube was incubated for 48 hours at 37 C and a drop examined microscopically. If negative, it was reincubated and reexamined 48 hours later, and if still negative, discarded. A portion of the discharge was placed on a slide, dried, and stained by the Gram method to demonstrate the vaginal flora. Trichomonads cannot be seen in such a preparation. From each patient at least one wet smear, one dry smear, and one culture were made. A negative wet smear does not exclude the diagnosis of Trichomonas vaginalis infection. Ultimate reliance must be placed on the culture method, which gave 100% accuracy, as against the 90% afforded by the wet smear. A single negative wet smear and a single negative culture were not accepted as definite proof that the patient was uninfected with T. vaginalis, for in 8% of these patients a subsequent wet smear or culture was found to be positive. Each woman having trichomoniasis was told to bring fresh urine from her husband. Of the 36 samples examined by smear and culture, only one was positive (2.7%). Because of this low incidence, semen instead of urine was then studied; one semen specimen each from 48 men whose wives were heavily infested with T. vaginalis was cultured, and 28 (58%) of the specimens cultured were positive. The investigation of the male marital partner by culturing the semen for T. vaginalis is an important corollary to the treatment of trichomoniasis. One enteric-coated tablet (100 mg.) of 2-acetyl-

amino-5-nitrothiazole (Tritheon), three times daily after each meal, was given for 10 days to the women, and, to give the patients immediate symptomatic relief, some type of acid jelly was inserted intravaginally morning and evening for two weeks. Trichomoniasis was eliminated in one-third of the women whose marital partners were not treated. A 10-day course of oral treatment with Tritheon resulted in the eradication of the protozoan from the semen in 16 of 18 men. The cure of trichomoniasis by the eradication of the parasite as proved by cultures, instead of the temporary respite from the symptoms of the disease, necessitates the simultaneous treatment of both the wife and the husband, if the man is found to be a carrier.

The Problem of Rupture of Uterus. H. Puder and H. J. Wagner. Arch. Gynäk. **187:**119-133 (No. 2) 1955 (In German) [Munich, Germany].

Although cases of rupture of the uterus are frequently reported, there have been few investigations of its incidence, the relative importance of its various causes, and the influence of uterine rupture on the maternal mortality. The authors review 44 cases of rupture of the uterus that occurred in a period of 49 years at a women's clinic in which a total of 45,183 deliveries were made. Grouping the uterine ruptures into 7-year periods, the authors found that the incidence was highest during the period from 1906 to 1913 but that a new peak occurred between 1947 and 1954. The first period of high incidence coincided with a period when a narrow pelvis was frequently observed and cesarean operations were rarely done. The decreasing incidence during the subsequent periods may be partly explained by the great reduction in the number of high multiparas as a result of birth control and with this in the number of torso presentations, these being especially likely in women with many children. The decrease in forceps deliveries, versions, and other obstetrical interventions may also explain the reduction in ruptures of the uterus. The second peak in incidence coincided with the great increase in cesarian operations (cicatricial ruptures) and with the era of the frequent use of ecbolics. However, only 4 of the 44 were cicatricial ruptures. Twenty-eight, or nearly two-thirds of the ruptures, occurred in the clinic, whereas the other 16 women were brought to the clinic after the rupture. In this group of 16 the maternal mortality was practically 100%, whereas in those women in whom the uterus ruptured while they were in the clinic the mortality was 50%. Fatalities from uterine ruptures accounted for 14.1% of the total maternal deaths. Although the maternal mortality at the clinic from which these records were obtained decreased during the 49-year period from 1.3% to 0.15%, the lethality and mortality of rupture of the uterus did not decrease to the same extent. The maternal lethality of uterine rupture during the first 7-year period (1906-1913) was 92% (12 of 13), and during the last 7-year period (1947-1954) it was 53% (8 of 15).

PEDIATRICS

Prolonged Interrupted Treatment of the Nephrotic Syndrome in Children with ACTH and Cortisone. R. Debré, P. Royer, B. Lévêque and Z. Minor. Semaine hôp. Paris **32:**263-275 (Jan. 22) 1956 (In French) [Paris, France].

The authors were led to use prolonged but discontinuous therapy with cortisone and corticotropin in the nephrotic syndrome because the findings of other workers and their own practical experience with 10-day courses of treatment showed that the patients needed the hormones longer to achieve and maintain metabolic equilibrium and avoid relapses. During an 18-month period, they treated 10 children with the nephrotic syndrome, most of whom were severely ill. The result was total remission of all the symptoms of the disease, including microscopic hematuria, in all the patients. In a few cases, the result was achieved after only two weeks of therapy, but the usual time required was three, four, or five months. The patients continued to improve as long as they were receiving treatment; 50% of them improved after treatment was stopped, thus making the average duration of benefit obtained eight months. The other 50% suffered relapses characterized only by the return of the humoral signs of the disease, which easily yielded to retreatment. The administration is as follows: 100 mg. of corticotropin daily for 10 days, then 100 mg. of corticotropin or 300 mg. of cortisone daily four days a week until the remission appears (these doses must be increased after a month if no improvement is noted), then maintenance with three-day courses of the doses mentioned over a period of from six months to one year. A low-salt diet accompanies the initial phase of treatment. Prophylaxis against upper respiratory tract infections must be strict. Even better results are now being obtained in the nephrotic syndrome with the same program of treatment using Δ^1-dehydrocortisone.

Intestinal Obstruction in the Newborn. J. C. Handelsman. Postgrad. Med. **19:**71-79 (Jan.) 1956 [Minneapolis].

Since the newborn child tolerates operation well but suffers greatly from dehydration and peritonitis, prompt diagnosis of intestinal obstruction is of vital importance. The author describes the diagnostic and therapeutic, particularly surgical, measures to be employed in infants during the first 72 hours of life when (1) there is expectoration or vomiting without prominent distention, (2) when there is vomiting and distention, and (3) when there is obstruction due to anorectal anomalies. Early diagnosis permits treatment before severe physiological imbalance has developed in newborn infants.

Wilms's Tumour: Its Treatment and Prognosis. L. S. Scott. Brit. M. J. **1:**200-203 (Jan. 28) 1956 [London, England].

Sixty-one children with nephroblastoma (Wilms' tumor) were studied, and 1,581 cases of nephroblastoma collected from the literature were reviewed. This is the commonest tumor of the kidneys in infants and children. It may occur at any age, but most of the patients were in the first four years of life. Although these tumors are generally highly sensitive to irradiation, combined surgical treatment and radiotherapy produce much better results than those obtained by either method alone. Whether or not irradiation is given before surgical treatment, a course of irradiation should be given postoperatively in order to destroy any remaining malignant cells. A wide transperitoneal or transthoracic exposure of the kidney is recommended to allow early ligation of the renal pedicle and to permit a wide dissection of the adjacent fatty tissue and lymphatics. The ideal technique is prompt nephrectomy after minimal preoperative handling, combined with intensive irradiation to the loin; irradiation should be started immediately after the operation. If the surgeon has had little or no previous experience with these tumors, nephrectomy will be greatly facilitated by preoperative radiotherapy. It is unjustifiable to postpone nephrectomy because of a dramatic improvement after radiotherapy; viable tumor cells will still be present, and delay may only increase the chance of their dissemination. The destructive effect of roentgen rays on leukocytes has been noted, but the effects on wound healing are less pronounced in children and should not prevent early institution of postoperative irradiation. Tissue doses of less than 1,000 r seldom resulted in permanent vertebral damage, but tissue doses in excess of 2,000 r produced retardation of bone growth irrespective of the child's age. The effects of radiotherapy on the tumor were studied microscopically in five cases, and it was noted that, although there was a pronounced increase in the amount of necrosis and degeneration, focal islets of actively malignant cells could almost always be found. The mortality rate among the patients whose cases were collected from the literature was about 80%, although more recent reports suggest that as a result of earlier diagnosis and consequently earlier treatment this figure is now being reduced. The mortality in boys is as high as in girls. If the tumor makes its appearance before the child is one year old the chances of survival are much improved. Hematuria, which denotes ulceration or invasion of the renal pelvis, has a grave prognostic significance. These tumors are prone to recur within nine months of nephrectomy, and recurrences after radiotherapy tend to be highly resistant to irradiation.

UROLOGY

Primary Amyloidosis of the Lower Genitourinary Tract. J. H. McDonald and N. J. Heckel. J. Urol. **75:**122-132 (Jan.) 1956 [Baltimore].

The authors present three cases that illustrate the characteristics of primary amyloidosis of the lower genitourinary tract. The first patient, a 54-year-old woman, was admitted to hospital because of painless intermittent hematuria of seven months' duration. Cystoscopic examination at monthly intervals after the onset revealed a lesion varying from a tiny blood streak on a small mucosal elevation to a blue-purple, bleeding, sessile mass 3 cm. in diameter located in the dome of the bladder. The variation in activity of the lesion seemingly corresponded to an estrus cycle, and a tentative diagnosis of vesical endometriosis was made. A segmental resection of the bladder lesion was performed, revealing a mass 3 cm. in diameter in the dome of the bladder sharply elevated above the surrounding normal mucosa, well localized, purple-red in color, and hemorrhagic in character. The postoperative course was uneventful, and the patient has remained in perfect health. Microscopic examination of the mass revealed primary amyloidosis. The authors present data on 10 previously reported cases of primary tumefactive amyloid disease of the bladder. The characteristic symptom of the vesical lesion is painless gross hematuria. Most patients were in the 50 to 60 year age group. The cystoscopic picture varies, but it generally reveals a solid, circumscribed, elevated, sessile mass with a hemorrhagic, irregular surface of yellow tint, frequently oozing blood. Almost invariably the mass appears as an infiltrating neoplasm. Diagnosis may be made by repeated cystoscopic examinations at short intervals and by biopsy. The proper treatment of this lesion, when the location is appropriate, is segmental resection. However, transurethral resection has been performed in five recorded cases and was successful in three instances. Irradiative methods do not appear to be logical. In the other two patients, primary amyloidosis was found at autopsy in the seminal vesicles, and in one also in the prostate. One of these patients was a 97-year-old man who died six days after surgical approximation of a fracture of the femur. The other patient, a 60-year-old man, was hospitalized because of progressive cardiac decompensation. It is questionable whether primary amyloidosis of the seminal vesicles is of clinical importance. Although no instance of primary amyloidosis of the urethra is presented here, the authors emphasize its clinical importance, pointing out that the formation of localized tumor-like masses in the submucosa of the urethra produces obstruction. Involvement of the anterior, bulbomembranous, and the posterior urethra have been reported. The diagnosis has been made only after histological examination of tissue removed by sharp curettage or by external urethrotomy. Both treatments seem to be equally satisfactory.

Transvesical Prostato-Adenomectomy with Primary Closure of Bladder. N. S. R. Maluf. Am. J. Surg. **91:**184-197 (Feb.) 1956 [New York].

Maluf used Hryntschak's modification of Harris' adenomectomy in 65 unselected patients with severe symptoms of prostatic enlargement. The catheter was removed on the first postoperative day in most cases. This appeared advantageous in reducing or preventing morbidity (pain, fever, confinement to bed). The patients remained dry suprapubically. On the day after the operation the patients were able to empty the bladder completely, although the initial postoperative tidal volumes were small (30 to 90 cc.), probably because of surgically induced hyperirritability of the bladder. The patients therefore voided frequently. Few patients had vesical spasm during the first 24 to 48 hours postoperatively. Tidal volumes increased rapidly after surgery. By the eighth postoperative day they were close to 200 cc. Postoperative hemorrhage occurred in one patient. This was secondary to a lapse in fundamental hemostatic technique. The transverse sutures of plain catgut at the vesical neck became disrupted by partial absorption on the fifth or sixth postoperative day. The Hryntschak procedure was safe even with bilateral hydronephrosis and hydroureter secondary to prostatic hyperplasia. It was safe in prostatic adenoma with abscesses and fever and in moderate "irreversible" uremia. The Pfannenstiel incision was performed in nearly all cases. A small midline counter-incision at right angle to the main incision was suitable in averting rapid superficial closure of the wound and thus in preventing collection of seropurulent fluid subcutaneously. There was no operative death, but there was one postoperative fatality, probably from intracranial hemorrhage in a poor-risk patient. There was no permanent or prolonged incontinence.

The Management of Cryptorchism. C. W. Charny and W. Wolgin. Surg. Gynec. & Obst. **102:**177-186 (Feb.) 1956 [Chicago].

Cryptorchism occurs in 10% of newborn boys, 2% of pubertal boys, and in 0.2% of adult males. The reduced incidence from birth through adolescence is only in small part the result of treatment. Most of it reflects the high frequency of spontaneous descent. Testes that descend during the first few months of life probably have a normal potential for development. Therapeutic measures aimed at correcting cryptorchism should be instituted before the age of 10 years. Testes that descend after the administration of moderate doses of gonadotropins before the patient is 10 years of age generally display satisfactory spermatogenesis. Those that descend only after large doses of gonadotropins possess serious spermatogenic defects. Cryptorchism is encountered in a variety of endocrinopathies. The testis is hypoplastic, and unless the primary condition is remedied it will not develop properly even if its position is corrected surgically. Concepts of the functional capacity of the undescended testis have changed considerably since the introduction of testicular biopsy. The authors studied the testis by means of biopsies in the following categories: (1) the normal picture from birth through adolescence; (2) after spontaneous postnatal descent; (3) after descent resulting from hormone administration; (4) during orchiopexy and at varying periods after operation; (5) infertile adults with a history of preadolescent orchiopexy. The observations reported herein are based on the histological examination of nearly 100 normal testes in patients of various ages from birth through adolescence and of 142 testes whose descent into the scrotum was effected by various therapeutic methods. The authors feel that, from the viewpoint of spermatogenesis, operation for cryptorchism as presently performed results in only an occasional success. In nearly 80% the operation is a failure in that spermatogenesis is not improved by the procedure, and in an additional 20% operation results in planned or unintentional loss of all testicular tissue. Orchiectomy for relief of cryptorchism and prevention of malignancy has been in use for many years. It is still the method of choice in the hands of those who believe that it is justifiable in order to overcome the increased incidence of malignancy in the undescended testis. Orchiectomy is occasionally done if it is found impossible to bring the testis into the scrotum during orchiopexy. Watchful waiting is justified in asymptomatic, uncomplicated unilateral cryptorchism because the incidence of infertility in men with unilateral cryptorchism is no greater than that of the average male population.

Calcification and Calculus Formation in a Series of Seventy Cases of Primary Hyperparathyroidism. J. Hellström. Brit. J. Urol. **27:**387-393 (Dec.) 1955 [Edinburgh, Scotland].

Hyperparathyroidism may be associated with true calculi, with the type of calcification designated as nephrocalcinosis, or both. Hellström observed renal calcification or true calculi in 56 of 70 patients with hyperparathyroidism. The possibility of hyperparathyroidism should be considered and a careful investigation made in every case of radiologically detectable calcification or lithiasis in the kidneys. While the majority of patients with primary hyperparathyroidism had radiologically demonstrable nephrocalcinosis either alone or together with concretions, some kidneys that were examined histologically after operation or autopsy showed nephrocalcinosis that had not appeared in the radiographs. The author feels that precipitation of lime salts in the tubules is the primary factor; when the calcium reaches the surface of the papillae or enters the renal pelvis, there will be secondary deposits of lithogenous material. Besides the nephro-

calcinosis, other lithogenous factors such as infection may play a part, and this explains the varying chemical composition and rate of growth of the calculi. The nephrocalcinosis of hyperparathyroidism seems to involve not merely a precipitation of lime salts in the tubules due to disturbances of the calcium and phosphorus metabolism but also a tubular damage produced by the parathyroid hormone. This is evident from the inability to excrete concentrated urine that is so characteristic of patients with hyperparathyroidism, even when they have no detectable nephrocalcinosis.

OTOLARYNGOLOGY

Heparin in Treatment of Deafness, Tinnitus, and Vertigo: Results in 100 Cases. R. Mayoux, J.-P. Rebattu, J. Carré and G. Lesné. Presse méd. **64**:28-29 (Jan. 7) 1956 (In French) [Paris, France].

Heparin is suitable for the treatment of certain patients with labyrinthine disturbances because it favors resorption of exudates; disperses blood cells, thus restoring blood vessel permeability; is antianaphylactic and sympathicolytic; and acts on connective tissue by altering collagen fibers (in a manner as yet poorly understood). The authors report their results in 100 patients. The treatment proved not to be dangerous, but it seemed essential that the patients be hospitalized. The best mode of administration of heparin was found to be 250 or 300 mg. a day for eight days. Deafness was immediately improved in 16% of cases, tinnitus in 59%, and vertigo in 66.6%. Usually, but not always, the results are maintained during the months that follow. They are particularly good in patients who have sustained cranial injury, provided treatment is instituted early, i. e., about a month after the injury. The results of heparin therapy are even more interesting from the physiopathological than from the clinical point of view, since they serve to separate the disorders due to lesions of the sensory cells (not amenable to therapy) from those due to involvement of vascular and connective tissue. Heparin should be tried when other treatments have lost their effect. However, it is pointless to use it in almost total deafness. Large doses must be given. Surprising results sometimes occur in deafness, and more than half of patients with labyrinthine disorders receive some benefit.

THERAPEUTICS

Vitamin U Therapy of Peptic Ulcer: Experience at San Quentin Prison. G. Cheney, S. H. Waxler and I. J. Miller. California Med. **84**:39-42 (Jan.) 1956 [San Francisco].

Several reports have appeared in the literature on the treatment of peptic ulcer with a green plant substance contained in raw cabbage juice. The clinical use of this substance, or antiulcer factor, which has been termed "vitamin U," was based on the results of animal experiments that indicated that peptic ulcer might be a nutritional deficiency disease. The authors set up a double-blind control experiment to test the merit of vitamin U therapy in the management of peptic ulcer in humans. Patients at San Quentin Prison with an ulcer crater were given either concentrated cabbage juice or placebo facsimile. The evaluation of the merit of this treatment was based upon repeated x-ray examinations of the ulcer crater. A period of 22 days was allowed for ulcer crater healing time. The results of this experiment indicated concentrated cabbage juice to be effective in the healing of peptic ulcer.

Dissecting Aneurysm During Methonium Therapy: A Report on Nine Cases Treated for Hypertension. D. W. Beaven and E. A. Murphy. Brit. M. J. **1**:77-80 (Jan. 14) 1956 [London, England].

Forty-four patients with hypertension died after they had been treated with hexamethonium or pentolinium tartrate. Autopsies revealed a dissecting aneurysm of the aorta in 9 (20%), 8 of whom were men between the ages of 28 and 60 years and one a 55-year-old woman (a ratio of 8 to 1). Thirty-four patients had malignant hypertension, and in 6 (18%) of this group dissecting aneurysm was revealed by autopsy. The remaining 10 patients had benign hypertension with major complications or severe symptoms, and in 3 of this group dissecting aneurysm was revealed by autopsy. Of 289 untreated control patients with hypertension who died and on whom autopsies were performed, dissecting aneurysm of the aorta was found in 7 (2%). Eighty-nine of the 289 patients had malignant hypertension, and in one (1%) of this group a dissecting aneurysm of the aorta was revealed by autopsy. The remaining 200 patients had benign hypertension, and in 6 of this group dissecting aneurysm was revealed by autopsy. Reports in the literature on dissecting aneurysm of the aorta in malignant hypertension are extremely rare. The frequent occurrence of this complication in the patients treated with hexamethonium or pentolinium tartrate may be causally related to this treatment. Three explanations are given for the possible mechanism of production of dissecting aneurysm. 1. Treatment with the hypotensive agents prolongs life and allows this complication to develop. 2. The fluctuation in the blood pressure of the patient encourages the development of dissecting aneurysm. 3. The hypotensive agents have a specific biochemical effect on the aorta.

Observations on the Use of Prednisone in Treatment of Blood Disorders and Malignant Neoplasms. F. Magrassi and G. Consoli. Minerva med. **46**:1698-1708 (Dec. 12) 1955 (In Italian) [Turin, Italy].

Prednisone was used in the treatment of nine patients with malignant lymphogranuloma, in two with acute and one with subacute monocytic leukemia, in three with systemic sarcomatosis, and in four with, respectively, chronic lymphatic leukemia, hepatic reticulosarcoma, metastasis secondary to ocular melanosarcoma, and metastasis secondary to renal carcinoma. The drug did not cause severe side-effects, and it had a marked beneficial effect on the general toxic symptoms present in the patients and especially on the elevated temperature. This effect was almost immediate in nearly all of the patients in whom the fever was caused by either the granulomatous, leukemic, or neoplastic process. The fever dropped after two to three 5-mg. tablets had been given. This drop in temperature was accompanied at first by profuse sweating and increased diuresis and soon thereafter by improvement in the patients' general condition and by a feeling of well-being. It was possible to maintain these good effects with relatively small doses of prednisone. The effect of prednisone on the fever was less marked in patients with systemic sarcomatosis. When it was given before or concurrently with cytostatic agents or roentgen therapy, it potentiated the action of the former and diminished or eliminated the side-effects of both. Because of the results it brought about in these patients and because it can be given in relatively large doses over a prolonged time without side-effects and contraindications, prednisone should be preferred to corticotropin, cortisone, and hydrocortisone in the treatment of blood disorders and malignant neoplasms.

Prednisone and Blood Disorders. E. Polli, P. F. Crosti and P. M. Carrara. Minerva med. **46**:1723-1728 (Dec. 12) 1955 (In Italian) [Turin, Italy].

On the basis of the clinical results obtained with the use of cortisone, hydrocortisone, or prednisone in patients with blood disorders, the authors state that prednisone should be preferred because it is clinically more active than the others, has fewer side-effects, and does not interfere with the water-salt metabolism. In their experience with this new agent, they found that it gave good results in patients with hemolytic anemia. It also had a noteworthy effect in patients with malignant lymphogranuloma to whom they administered it combined with mustard gas. The authors advocate the use of prednisone, with or without other therapeutic agents, in the treatment of acute leukemia because the minimum remission periods can be prolonged. However, it should not be used in the treatment of chronic lymphatic leukemia.

BOOK REVIEWS

A Course in Practical Therapeutics. By Martin Emil Rehfuss, M.D., F.A.C.P., LL.D., Director of Division of Therapeutics in Department of Medicine, Jefferson Medical College, Philadelphia, and Alison Howe Price, A.B., M.D., Associate Professor of Medicine, Jefferson Medical College. Third edition. Cloth. $15. Pp. 972, with 101 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1956.

This valuable compendium of treatment is unusually complete for a single volume. Its 24 contributors include well-qualified internists, pathologists, dermatologists, radiologists, ophthalmologists, gynecologists, otolaryngologists, physiatrists, surgeons, and neuropsychiatrists. The chief alterations in this new edition involve antibiotics, steroids, antihypertensive drugs, and radiation in medicine. The format of the book has remained essentially unchanged. The first section concerns general therapeutics. There is an almost philosophical discussion about the approach to treatment of disease. It emphasizes the necessity for evaluation of the patient and an adequate diagnostic survey. There is some good advice on how to effectively get across to the patient the therapeutic regimen that has been planned for him. This section also includes information about prescription writing, preparations of drugs, dietary principles, and nursing problems. Since complete cure is often unattainable, the authors have included a section entitled Symptomatic Therapy. This emphasizes the fact that there are almost no illnesses—not even carcinoma—that cannot be helped by skillful, well-directed therapy. Among the conditions dealt with in this part are acute abdominal emergencies, anorexia, anuria, ascites, backache, coma, edema, fever, insomnia, pain, pruritus, hiccup, and many others. The third section is a review of treatment for specific disorders. This is the real backbone of the work and comprises well over 50% of its content. It is characterized by the same thoroughness that pervades the whole. To enumerate the diseases for which therapeutic principles are given would be to record virtually all topics included in a general medical text. The final section on special treatment is composed of up-to-date material on the antibiotics; steroid therapy; ocular, nasal, and otological therapeutics; dermatological therapeutics; psychotherapy; preoperative and postoperative care; body water and electrolytes; oxygen therapy; radioactive isotopes; radiation therapy; pediatric treatment; and gynecologic therapeutics. The book is almost entirely in outline form. The illustrations are excellent. Most of them appear in the section on treatment of specific disorders, and they present in a graphic way the essential symptoms and physical findings in specific diseases. This book can be enthusiastically endorsed as a useful reference for the internist, general practitioner, and medical student. The authors have succeeded in large measure in their attempt to correlate clinical medicine with applied therapeutics. It is noted incidentally that on page 5 "Sulkowsky test" should read "Sulkowitch test." On page 893, there is a typographical error in the word "energy."

Ministry and Medicine in Human Relations. Iago Galdston, M.D., editor. New York Academy of Medicine [book]. Support of Josiah Macy, Jr. Foundation, Hogg Foundation, and McGregor Fund is gratefully acknowledged. Cloth. $3.50. Pp. 165. International Universities Press, Inc., 227 W. 13th St., New York 11, 1955.

The New York Academy of Medicine sponsored this excellent symposium whose contributors are without exception competent professional people of standing who write with clarity, even brilliance. Too often, symposiums are of very uneven quality, but this slim volume achieves a uniformly high quality. Rice, Lindemann, Rado, Montague, Hollingshead, Alexander, Zilboorg, Clark, Tillich, and Galdston all enhance their reputations by their articles in this book. Throughout the book the emphasis is placed on the sick person as a whole man for whose effective restoration to health the disciplines and resources of medicine and religion are needed. It was surprising and gratifying to find in such brief compass so many worth-while things said and so many penetrating insights shared.

Any number of passages merit quotation. Leo Alexander's experience with Dr. Karl Brandt, Hitler's plenipotentiary in charge of the extermination of persons deemed "undesirable" by the Nazi state, has given him an added appreciation of the cruelties raw human nature can conceive and commit and moves him to declaim against anything that would degrade man to the status of a "mere individual" and to speak strongly of the value of "an unshaken belief in the divinity of the soul and the inalienable rights of the human being as a creature of God." Robert A. Clark writes of the quest for the truest expression of our inner being. He makes a strong plea for depth psychotherapy and expresses movingly the hope that "psychiatrists will then be able to help more of their patients more fundamentally and clergymen will be able to lead more of their parishioners to a deeper spiritual life" as together they tap "the great collective sources of psychic and spiritual energy." Paul Tillich draws most effectively the necessary distinction between "moralism conditioned and morality unconditioned" and calls for a recognition of the fact that self-control is control from within, not compulsion from without. He says "the moral imperative is not a strange law, imposed on us, but is a law of our own being. In the moral imperative we, ourselves (in our essential being) are put against ourselves (in actual being)." Otis Rice supplies a very valuable introduction to part 2 in which he underlines the importance of magnifying the sense of "belongingness" and "togetherness" so that men are aware that "no matter what their predicament, they are still members of the Fellowship and the Fellowship is concerned about them." An admirable concluding chapter is the work of the editor. With judgment and finesse he sums up the preceding contributions: "There was some mention of the need for a common vernacular. On that score I think we need to exercise some caution. I do not think we need a common language. I do not think we can develop one, and that if we did, it would harm rather than benefit us. I do think, however, that we ought, each, to talk a translatable language." There will be general support for his contention that both ministers and physicians use too much "gabble-gook" language. We all have known "physicians entirely devoid of every sense of the transcendental and ministers 'with their feet in heaven and their heads, God knows where.'" All in all this is a symposium of high quality and great usefulness.

Cancer of the Lung: Pathology, Diagnosis, and Treatment. By Milton B. Rosenblatt, M.D., Associate Professor of Medicine, New York Medical College, New York, and James R. Lisa, M.D., Director, Pathology Service, New York City Department of Hospitals, New York. Cloth. $15. Pp. 330, with illustrations. Oxford University Press, 114 Fifth Ave., New York 11, 1956.

This interesting monograph is largely a compilation of data with very little of the authors' own material. The section on pathology is based on a study of their series of 208 autopsies and 69 pulmonary resections. It is regrettable that there is such a high proportion of autopsy material, because undoubtedly the findings as regards the extent of disease are entirely different from what they would be if the material were taken largely from clinical cases. In the discussion of the cause of bronchogenic cancer, the authors are definitely biased against the possibility that there might be a causal relationship between smoking and cancer of the lung. The chapter on x-ray is well illustrated and complete, but most of the examples are those of patients with advanced diseases. The chapters on bronchoscopy and cytological examination of aspirated material and sputum are probably the best in the book. The chapters on surgical therapy represent a compilation of statistics, and none of the authors' own results are given. The illustrations are amateurish. Lobectomy is advised as a definitive procedure, and it is regrettable that the authors believe that en bloc excision of the mediastinal lymph nodes is not justifiable. The chapter on palliative therapy consists primarily of a discussion of x-ray therapy and suggests that

These book reviews have been prepared by competent authorities but do not represent the opinions of any medical or other organization unless specifically so stated.

nitrogen mustard be used only when x-ray has failed, which is at variance with the belief of many others. The book is poorly organized. It has a large bibliography that is complete but not entirely accurate.

Soranus' Gynecology. Translated with introduction by Owsei Temkin, M.D. With assistance of Nicholson J. Eastman, M.D., Ludwig Edelstein, Ph.D., and Alan F. Guttmacher, M.D. Publications of Institute of History of Medicine, The Johns Hopkins University. Second Series: Texts and Documents, volume III. Cloth. $5. Pp. xlix; 258, with 2 illustrations. Johns Hopkins Press, Homewood, Baltimore 18; Oxford University Press, Amen House, Warwick Sq., London, E.C.4, England, 1956.

Soranus was one of the most learned, critical, and lucid authors of antiquity. Like many Greek physicians he practiced medicine in Rome. He died at about the time Galen was born, in the early second century. He wrote nearly 20 books, of which this is the most important. His other writings dealt with internal medicine, surgery, anatomy, hygiene, materia medica, embryology, and other branches of medicine. This book is divided into part 1, which deals with the midwife, and part 2, which deals with obstetrics. Soranus' first requirement of a midwife was literacy. "Gynecology" also contained data on pediatrics. There is reason to assume that it was illustrated, but none of the original illustrations have been preserved. It contains many interesting discussions, comments, and instructions. Among them are the following: "It is good to preserve the state of virginity until menstruation begins by itself, for this will be a definite sign that the uterus is already able to fulfill its proper functions." "The best time for fruitful intercourse is when menstruation is ending and abating, when urge and appetite for coitus are present." "A contraceptive differs from an abortive, for the first does not let conception take place, while the latter destroys what has been conceived." Specific instructions are given to the midwife on how to recognize labor and how to conduct it. There is also information on the care of the newborn. One section is headed How to Recognize the Newborn That Is Worth Rearing. At the end of the book are lists of current names, a materia medica, and an index of personal names and subjects. This delightful book is recommended highly. It is unfortunate that only a relatively small number of physicians are interested in the history of medicine, but everyone should enjoy reading this book. The translator deserves great credit for his contributions. Likewise, the collaborators and the publishers deserve commendation.

Practical Neurology. By Leo M. Davidoff, M.D., Professor and Chairman, Department of Surgery of Albert Einstein College of Medicine, and Emanuel H. Feiring, M.D., Associate Professor of Surgery (Neurosurgery), Albert Einstein College of Medicine, New York. Handbooks for general practitioner. Cloth. $7. Pp. 442. Landsberger Medical Books, Inc., New York; distributed by Blakiston Division, McGraw-Hill Book Co., 330 W. 42nd St., New York 36, 1955.

Two neurosurgeons have written a compendium of practical neurology. The reader may wonder whether a clinical neurologist could not have been found for the job. The senior author, a pupil of Cushing, is an outstanding neurosurgeon and neuroroentgenologist. Although the neurosurgical part is excellent, the clinical part is not. Here one feels that old editions of well-known textbooks have stood as godfathers at the compilation of the work. There are many inaccuracies, particularly striking in such a small guide. Hoffmann's sign is described under "superficial reflexes" (page 41). In a work written in 1956 there is no place for a "radial and ulnar periosteal [!] reflex" (page 40). One should not speak of abdominal reflexes, but a strict distinction should be made between cutaneous and muscular abdominal reflexes. One cannot say that in amyotrophic lateral sclerosis "the abdominal . . . reflexes usually disappear" (page 359). This happens only to the cutaneous abdominal reflexes, whereas the muscular abdominal reflexes may be exaggerated. "When the [hemiplegic] patient yawns or stretches, the elbow, wrist and fingers tend to extend" (page 80). Such a generalization is not warranted. Meralgia paresthetica "may occur as a consequence of pressure or trauma" (page 139). Yes, it may, but it is most frequently infectious. Queckenstedt's test (page 111) is not explained. To the Gerstmann syndrome (page 164) only two lines are devoted. There are too many eponyms, and some of them are misspelled. It is Gradenigo, not "Gradenego" (page 92) and Hoffmann, not Hoffman (page 41). One of the misspellings has been stubbornly copied by many writers; it is Simmonds, not Simmond (page 422). Some will doubt the wisdom of including in such a work eponyms like Letterer-Siwe's disease, Clutton's synovitis, and Dyke-Davidoff-Masson's syndrome. Signs and symptoms are hopelessly mixed up throughout the whole work. In spite of all this it is a good book, well written and soundly informative. The therapy is well handled. The main criticism is that it is not clear for whom this book is designed. Certainly not for the student or the budding neurologist. The authors say it is "intended for the physician engaged in general practice," but for this purpose it is simply not enough. No general practitioner will start treating neurological cases refreshed and rearmed with the knowledge contained in this book. Such small compendiums, which open a back door to neurology in a few easy lessons, are fraught with danger. If a general practitioner feels the need to refresh his knowledge of neurology, he should take an extensive postgraduate course and/or read a good middle-sized textbook such as those by Brain, Merritt, Nielsen, or Wechsler. In the words of Alexander Pope, "A little learning is a dangerous thing."

Brain Mechanisms and Consciousness. Symposium organized by Council for International Organizations of Medical Sciences established under joint auspices of UNESCO and WHO. Consulting editors: Edgar D. Adrian, Frederic Bremer, and Herbert H. Jasper. Editor for Council: J. F. Delafresnaye. Cloth. $8.50. Pp. 556, with illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1954.

This book consists of a series of papers read at an international conference in Canada in August, 1953. Each author was particularly qualified in his field. Included in the group were many of the leaders of neurology such as W. R. Hess, F. Bremer, E. D. Adrian, W. Penfield, W. Grey Walter, H. H. Jasper, K. S. Lashley, and Mary Brazier. Due to recent advances in neuroanatomy, neurophysiology, and neurosurgery and in knowledge concerning the functional significance of the subcortical structures of the brain, particularly the basal ganglia and the brain stem reticular systems, the time seemed favorable to try to correlate these data with the psychological concept of consciousness. Although the facts revealed by neurophysiology, especially those resulting from electroencephalographic studies, and by neurosurgery, through removal or detachment of portions of the brain, could be documented, a good deal of difficulty was encountered by the members of the symposium in defining the psychological concept of consciousness. The book should be helpful in calling attention to the recent work on cerebral mechanisms, although the speculations brought out by discussion regarding the old problem of brain versus mind provided only a few pertinent hypotheses to guide research in the future years. Skillfully edited, with much of the discussion added, and provided with an extensive bibliography, this report should prove of value as a reference tool for the specialist. For medical men in general it should serve as a means of reemphasizing our state of almost complete ignorance regarding the integrative function of the brain, either on a mechanical or psychological basis. We are only a little further along the path than the point at which Sherrington left us more than a decade ago.

Atopic Dermatitis. Edited by Rudolf L. Baer, M.D., Associate Professor of Clinical Dermatology and Syphilology, New York University Post-Graduate Medical School, New York. Cloth. $2.50. Pp. 112, with 6 illustrations. New York University Press (book) distributed by J. B. Lippincott Company, 227-231 S. Sixth St., Philadelphia 5; 2083 Guy St., Montreal, Canada; Pitman Medical Publishing Co., Ltd., 39 Parker St., Kingsway, London, W.C.2, England, 1955.

In this pocket-sized symposium on a controversial subject six authorities in dermatology review the major clinical and laboratory features of atopic dermatitis and discuss the current concepts of its cause and management. Reports of recent physiological studies on patients with this disease showing abnormal vascular responses at the sites of predilection of this disease, a paradoxical vasoconstriction with acetylcholine, and other changes are included. Particularly thought-provoking is the evidence, presented by Rostenberg, Jr., that specific atopic reactions are not a necessary or sufficient condition for the production of the skin

lesions of atopic dermatitis. While there are some differences of opinion among the contributors, there is a general tendency throughout the symposium to regard allergic reactions and emotional disturbances as precipitating rather than causative factors in the production of these skin lesions. Sulzberger believes that the emotional disturbances are the result, not the cause of the eruption. As a result of these views most of the contributors minimize the importance of psychotherapy and specific desensitization in the management of this disease. All dermatologists, allergists, and others who encounter atopic dermatitis frequently should acquaint themselves with the material presented in this symposium, although not all will agree with the conclusions reached. This material was originally published in *American Practitioner and Digest of Treatment.*

Handbook of Physiology and Biochemistry. Originally "Kirkes'" and later "Halliburton's." By R. J. S. McDowall, M.D., D.Sc., M.R.C.P., Professor of Physiology, University of London, King's College, London. Forty-second edition. Cloth. $9. Pp. 759, with illustrations. Blakiston Division, McGraw-Hill Book Company, Inc., 330 W. 42nd St., New York 36; 95 Farrington St., London E.C.4, England, 1955.

This book presents many of the essential facts of physiology for medical students. Whether the presentation will be considered adequate for a given course will depend on the extent to which normal functions are discussed in other parts of the curriculum. The section on reproduction, for instance, is largely occupied with details of anatomy and endocrinology and omits many of the questions of function for which readers expect to find authoritative, detailed answers in a complete scientific textbook. This is, for the medical student, not a fatal omission if sufficient attention is given to descriptions of the normal in later courses on gynecology and genitourinary surgery. The sections on taste and smell, similarly, reflect little of the development that has followed the discovery of phenylthiourea, and the section on color vision overlooks the quantities of data obtained during and after World War II on the color-contrasts and signal-forms that can be distinguished by the largest possible number of people. These wants can likewise be supplied if there is, elsewhere in the curriculum, an adequate course in medical psychology. In general, the book is clearly written. Medical students will appreciate the fact that the text has been kept within reasonable bounds. The illustrations are excellent, and there is a good bibliography. The index is detailed and accurate.

Androgens: Biochemistry, Physiology, and Clinical Significance. By Ralph I. Dorfman, Ph.D., Associate Director of Laboratories, Worcester Foundation for Experimental Biology, Shrewsbury, Mass., and Reginald A. Shipley, M.D., Director, Radioisotope Unit, Veterans Administration Hospital, Cleveland. Cloth. $13.50. Pp. 590, with illustrations. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16; Chapman & Hall, Ltd., 37-39 Essex St., Strand, London, W.C.2, England, 1956.

This monograph summarizes the vast literature that has accumulated in the past 25 years on the androgens, often less accurately designated as the male sex hormones. A variety of androgenic agents, including the male sex hormone, are elaborated in the organism and play a part in metabolic functions distinct from those concerned with secondary sex characters. After a brief historical resumé, the authors discuss in detail the biochemistry, physiology, and clinical aspects of the androgens. Appended to the text are a tabulation of the known androgens and their derivatives and a description of the chemical and biological procedures used for their assay. The authors have contributed widely to this field, and this is reflected in their critical, accurate, and complete survey of the subject. The book is well documented, with extensive bibliographic references collected at the end of each chapter. The typography and general make-up of the book are excellent. The chief criticism to be offered regarding an otherwise commendable book is the authors' choppy, inelegant, and tautological style, which might have been overcome by careful editing. This is reflected in such careless errors as "severe" for "several" (page 376), "cyclopentnyl" for "cyclopentyl" (page 378), "route" for "form" (page 378), and in such expressions as "In a variety of species of birds, animals of both sexes" (page 14). The inclusion of roman numerals after each compound, although useful, tends to interfere with easy reading. Except for these criticisms, the book can be recommended highly to all workers interested in the biochemical, physiological, and laboratory aspects of the subject. The book is too specialized for the general medical reader, but the endocrinologist should find the clinical section of value.

Practitioners' Conferences Held at the New York Hospital–Cornell Medical Center. Volume 3. Edited by Claude E. Forkner, M.D., F.A.C.P., Professor of Clinical Medicine, Cornell University Medical College, New York. Cloth. $6.75. Pp. 293, with illustrations. Appleton-Century-Crofts, Inc., 35 W. 32nd St., New York 1, 1956.

The third volume of this publication presents, in the same manner as its predecessors, the edited and summarized panel discussions arising from a continuing series of bedside conferences on various clinical subjects that have been sponsored for physicians of the New York area. The panelists are outstanding authorities from that area. The current volume comprises 11 conferences, each of which forms a separate chapter and deals with such topics as the detection of early cancer, ulcerative colitis, tumors of the brain, and the common cold and its complications. As in previous volumes, the discussions are preserved in their original dialogue form, which makes for interesting reading. The discussions have been well edited and brought up-to-date. The names of the panelists appear at the beginning of each chapter, and each chapter concludes with a summary by the editor plus a list of references. No index is provided, but the subject matter is readily accessible from the table of contents. The contents and panel participants of preceding volumes are listed at the end of the book. One typographic error, "plans" for "plants," occurs on page 96. This third volume should be welcomed by clinicians with interest in practical discussions of a variety of medical problems.

Remington's Practice of Pharmacy. Editors: Eric W. Martin and E. Fullerton Cook. Associate Editors: E. Emerson Leuallen, Arthur Osol, Linwood F. Tice, and Clarence T. VanMeter, with cooperation of more than 200 assistant editors and contributors. Treatise on manufacturing, standardizing, and dispensing of pharmaceutical products, with biological and chemical properties, tests for purity, assays, uses, and doses; also guide to legal obligations of pharmacist and professional services rendered in helping to maintain community health. Textbook and reference guide for pharmacists, physicians, and other medical scientists. Eleventh edition. Cloth. $18. Pp. 1707, with over 1,000 illustrations. Mack Publishing Company, 20th and Northampton Sts., Easton, Pa., 1956.

Due to recent advances, the authors state that this text is the most profound revision since the first edition, which appeared in 1865. This complete reference book covers the manufacturing, standardizing, and dispensing of pharmaceutical products. The biological and chemical properties as well as tests for purity, assays, uses, and doses of pharmaceutical products are included. This edition includes the compounds in "United States Pharmacopeia" (15th edition), "National Formulary" (10th edition), and "New and Nonofficial Remedies—1955." A comprehensive index adds materially to the usefulness of this book as a ready reference. This should be a fine reference book for pharmacists, physicians, and others associated with the drug field.

The Psychosomatic Genesis of Coronary Artery Disease. By Don Carlos Peete, M.D., Associate Clinical Professor of Medicine, University of Kansas School of Medicine, Kansas City, Kansas. Cloth. $7.75. Pp. 220, with illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto, 2B, Canada, 1955.

The author propounds the thesis that insecurity in the individual is an important factor in the development of coronary artery disease. The approach is not particularly scientific. Much space is taken up with historical and biblical references. As a matter of fact, the medical history of coronary artery disease is the best part of the book. There are no controlled studies using standard psychometric methods. Although at one time some psychiatrists thought that a certain type of personality might characterize a person with coronary artery disease, such views are no longer generally held. The author has not contributed any real scientific information to this subject by taking the stand that the insecure person is the one who gets coronary artery disease and that other possible factors are of secondary importance. This book is interesting reading but should not be considered as a scientific reference book on the subject of coronary artery disease.

QUERIES AND MINOR NOTES

EMOTIONAL FACTORS IN HABITUAL ABORTION

TO THE EDITOR:—*What are the emotional factors involved in habitual abortion?* *M.D., Florida.*

ANSWER.—Psychogenic factors play a role in many instances of habitual abortion. Patients who abort habitually are apprehensive, fearful, and cry easily. Physicians who try to console such patients by stating that nature has deliberately cast off an abnormal gestation increase a guilt complex that is invariably present. Bevis (*Lancet* **2:**207 [Aug. 4] 1951) treated 32 women who had had three or more previous spontaneous abortions by extra bed rest at the time their menses would have appeared, but with no other specific treatment. Without any hormonal therapy, 29 of these women (91%) reached the 28th week of pregnancy and 26 babies (81%) were born alive and healthy. Bevis emphasized the high degree of confidence that his patients had in his investigation, and, to this psychological support, he attributed a large part of the success achieved. Bevis maintained that psychotherapy is the most valuable form of treatment for patients with a history of sequential abortions. Dunbar in "Therapeutic Abortion" (Rosen, H., editor, New York, Julian Press, Inc., 1954) says that obstetricians are beginning to recognize an abortion proneness, just as cold and accident potentialities are well known, and that emotional factors play a greater role than do external factors. Abortion-prone patients resemble one another much as do patients with accident proneness, but they are usually somewhat more susceptible to the psychosomatic approach. On the basis of clinical material, it appears that the percentage of frigid and relatively infertile women is high among those who abort habitually. Kroger and Freed (Psychosomatic Gynecology: Including Problems of Obstetrical Care, Philadelphia, W. B. Saunders Company, 1951) say, "There is considerable experimental and anatomic evidence that emotions may activate the uterine musculature to contract and thus cause placental separation. Even the almost overwhelming evidence that decreased elaboration of progesterone by the placenta is the responsible factor may be challenged. A placenta which has been disturbed by neurogenic impulses may actually be the primary factor, and the subsequent decreased progesterone output thus be secondary. This concept is further supported by the relative failure of progesterone therapy for this condition. Data of a positive nature which implicate the psyche consist of the evidence that the uteri of habitual aborters are hypersensitive to emotional stimuli, that domesticated animals abort under unfavorable emotional environment, and the reports from a number of psychiatric workers who have indicated favorable results following psychotherapy. There is also a considerable body of unclassified data which points to the role of emotions in abortion in patients who have miscarried during shock, fright or dangerous episodes. Inasmuch as hormonal therapy has been proven inadequate under rigidly controlled conditions, and it has even been suggested that many of the favorable results are actually the result of 'mental rest' and reassurance, a more comprehensive study of the psychodynamic factors in habitual abortion is required. The obstetrician may find it necessary to become more familiar with the emotional problems of pregnancy so that he may improve his therapeutic approach. Only in this way will the patient's unconscious neurotic motivations and attitudes toward pregnancy receive the attention necessary to decrease the possibility of abortion. Certain psychotherapeutic technics such as hypnosis may be of value in treating the acute phase of impending abortion by causing complete relaxation of the uterus. Patients who are refractory to superficial psychotherapy require the aid of a psychotherapist, preferably a psychoanalyst."

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any medical or other organization unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

EFFECT OF SALICYLATES ON HEART

TO THE EDITOR:—*Some 40 years ago, indiscriminate and more or less continuous self-medication with aspirin was disapproved of on the theory that the taking of coal-tar derivatives had an injurious effect on the heart. Why has there been a complete reversal of medical opinion on this subject?* *M.D., California.*

ANSWER.—In reviewing the older textbooks of pharmacology, it is apparent that in certain animal experiments large doses of salicylates had a depressant effect on the myocardium. The amounts used were not based on physiology nor similar to those doses that could be used therapeutically in man. These experiments had some influence, since Cushing, in his textbook, stated that, although there were those who felt salicylates were injurious to the heart, there was no clinical evidence to support this opinion. In brief, there has been no complete reversal of medical opinion, since a review of the older literature indicates that medical opinion was to the effect that salicylates had no adverse effect on the heart in the doses therapeutically administered.

KRAUROSIS OF VULVA

TO THE EDITOR:—*What is the present status of kraurosis of the vulva, as regards treatment and prognosis, in a woman 53 years of age? This condition was not present at the last examination three months ago.* *M.D., Pennsylvania.*

ANSWER.—The treatment of choice for kraurosis is vulvectomy. The reason for this is that, unless the affected part is removed by operation or relieved by conservative measures, in some of the patients carcinoma develops in the areas of kraurosis. Vulvectomy is easy to perform, and it carries practically no risk. The surgeon must be sure to remove not only the entire area of kraurosis but also a small amount of the surrounding normal skin. The results are usually good, although there are recurrences. While recognizing that surgical excision of the affected skin area is commonly carried out, and many times with permanent relief, Miller and associates (*Am. J. Obst. & Gynec.* **54:**543, 1947) have not accepted such surgical excision as an entirely satisfactory remedy, because it does not always result in a cure. Furthermore, for some women vulvectomy is a mutilating procedure, leading to additional problems, such as dyspareunia. Until the cause and cure of kraurosis are found, however, surgery will play a role in Miller's treatment, especially in older women with intractable pruritus and evidence of carcinomatous change. In such women, surgery should be radical. Miller found that there may be a chronic irritative urinary factor in the causation of kraurosis (*Am. J. Obst. & Gynec.* **64:** 768, 1952). Estrogen therapy is used by some gynecologists for kraurosis. The estrogen may be administered orally and/or hypodermically in doses somewhat larger than those given for menopausal disturbances. The results generally are not good, however, and local therapy must be used in addition. The local treatment is the same as that of symptomatic relief of pruritus vulvae. Patients must be warned that occasionally rather profuse bleeding may occur after the estrogenic hormones have been administered for some time or more often after the hormone therapy has been stopped. If the bleeding is serious, hormone therapy must be discontinued for a while and resumed later. Hormone therapy for kraurosis of the vulva should not be continued too long because, even though it relieves the itching, there remains the danger that carcinoma will develop in the involved area. Hyams and Bloom (*Am. J. Obst. & Gynec.* **53:**214, 1947) believe that kraurosis of the vulva is of metabolic origin and is due to a failure in the utilization and/or the absorption of vitamin A. They gave their patients from 250,000

to 500,000 units of vitamin A orally every day and injections of 50,000 units twice a week. In addition, each patient received 1 cc. of diluted hydrochloric acid in water three times a day with each meal. No other local or constitutional therapy was given. Objective improvement ran parallel to the degree of freedom from symptoms. In four years of observation not one patient showed a tendency toward carcinoma of the vulva.

ARMY PERSONNEL "GASSED" DURING WORLD WAR I

TO THE EDITOR:—*How many World War I men were "gassed?" What was the gas most commonly used? What are the late sequelae that might be occurring now? Occasionally I see a World War I veteran with a history of having been "gassed."*

Herbert L. Joseph, M.D., Vallejo, Calif.

ANSWER.—During World War I there were 70,552 U. S. Army admissions to medical treatment facilities due to poisonous gases. The table shows admissions by type of gas to which the men were exposed. These data were obtained from "The Medical Department of the United States Army in the World War" (War Department, 1925, vol. 15, pt. 2, p. 1023). The 70,552 admissions shown above refer only to Army personnel

Hospital Admissions Due to Poisonous Gases

Type of Gas	No. of Admissions	% of Total	% of Total for Which Type of Gas Was Specified
Total	70,552	100.0	.....
Type of gas specified	36,965	52.4	100.0
Dichlorodiethylsulfide (mustard gas)	27,711	39.3	74.9
Phosgene	6,834	9.7	18.5
Chlorine	1,843	2.6	5.0
Arsine	577	0.8	1.6
Type of gas not stated	33,587	47.6	.....

who came under the care of the medical department. Dichlorodiethylsulfide (mustard gas), which first came into prominence in July, 1917, soon became the most important gas in warfare during World War I. Many individuals allege that pulmonary difficulties followed exposure to irritant gases during World War I. Although it can be anticipated that some individuals may have chronic bronchitis, bronchiectasis, or pulmonary fibrosis, it appears likely that the majority do not have residuals directly attributable to exposure to irritant gases. The Committee on Veterans' Medical Problems, National Research Council, has in progress a study on the relationship of dichlorodiethylsulfide injury to later development of pulmonary cancer.

GRAY HAIR

TO THE EDITOR:—*It has been noted in a patient who, as her age has increased, has acquired the usual gray hair that during the past six months, for no apparent reason, her hair has become darker. She has not used medicated soaps or anything in the present so-called beauty line of toilet articles. Are there any medicines that would produce this change? Could there be some biological-chemical change taking place? She is at present taking a Theragram capsule and Peritrate in small doses.*

M.D., Louisiana.

ANSWER.—In most cases, graying of the hair with advancing age is genetically induced and an irreversible process in which there is a loss of tyrosinase from the follicular chromatophores. Reversible graying may occur in severe nutritional deficiencies; panthothenic acid is thought to be the primary essential nutritional factor for maintenance of hair color. In genetically induced graying, panthothenic acid and/or any other vitamin is not effective. It was claimed that para-aminobenzoic acid in large doses might restore natural hair color. Actually, an unnatural, colored oxidation product of para-aminobenzoic acid may be excreted with the hair. No metabolites, drugs, or other chemicals are known that would reverse genetically induced graying. Peritrate or Theragran certainly have no such effect. The consultant wonders if the darkening of the hair in the case reported is not just a delusion or, if not, whether the patient's claim of not using any hair dye is honest.

MANAGEMENT OF PARONYCHIAL INFECTIONS

TO THE EDITOR:—*Has anything successful been developed in the management of paronychial infections?*

M.D., California.

ANSWER.—Successful management of paronychial infections depends to a great extent on the causative factor. They may be either bacterial or mycotic infections. Culture of material from the lesion is often of value. Mycotic infections should be suspected in the more chronic cases. For the acute lesion of bacterial origin, hot soaks may be used in conjunction with an antibiotic agent used topically (preferably one that is not used systemically). Sometimes preparations given orally are required. Surgical drainage may be necessary if pus should accumulate. If the lesion is of mycotic origin, therapy should be with vanishing-cream bases containing either resorcinol, sulfur, ammoniated mercury, or the newer antimycotic agents, Mycostatin or the higher fatty acids. The finger must be scrupulously kept out of water. Sometimes it is necessary to resort to x-ray therapy.

BILATERAL URETERAL CATHETERIZATION

TO THE EDITOR:—*I would like an opinion as to the advisability of bilateral ureteral catheterization to minimize the danger of ureteral damage when moderately difficult total hysterectomies are to be done. The pelvic pathology in such cases would be nonmalignant. Extensive endometriosis, intraligamentous fibroids, or fibroids complicated by tubo-ovarian abscesses might be examples.*

M.D., Florida.

This inquiry was referred to two consultants, whose respective replies follow.—ED.

ANSWER.—A surgeon should show no hesitancy in use of ureteral catheterization in the event that he contemplates a difficult hysterectomy. By this method the ureters are more easily identifiable, and this is particularly true if the catheters are 6 F. or larger. More and more it is found by even the most experienced surgeons that it is most worthwhile to have catheters in place in the event of extensive dissections of the pelvis and/or the removal of very large lesions.

ANSWER.—This consultant does not catheterize ureters at all in pelvic surgery because, whenever doubt exists in difficult cases, the ureters should be identified abdominally. Catheters, being stiff, tend to push the ureters one way or another and may enhance the danger of trauma; also, they give a false sense of security. One who is qualified to do pelvic surgery should not become dependent on such a method of identifying strictures.

CONGO RED TEST

TO THE EDITOR:—*What is the status of the Congo red test for amyloid disease?*

Warren W. Smith, M.D., Columbus, Ohio.

ANSWER.—The Congo red test for evaluation of the presence of amyloid disease has been criticized (*J. Clin. Invest.* **27**:111, 1948) largely because the assumption that the determination of dye concentration four minutes after injection gives a true baseline for determining the disappearance of the dye is not valid in this test. It has been pointed out that in the presence of amyloid disease the dye disappears extremely rapidly from the blood. The suggestion has been made that the test should be made over a 30-minute period, with the determination of dye concentrations in the serum at frequent intervals, from which the theoretical initial concentration could be established by extrapolation on a semilogarithmic curve. The Congo red test is used less commonly because, since the advent of antibiotics, chronic suppurative disease as a cause of amyloid disease is becoming less frequent.

TRICHINOSIS

TO THE EDITOR:—*A common error made in reference to federal inspection of pork appears in the Queries and Minor Notes section of* THE JOURNAL, *Jan. 28, 1956, page 341. The answer stated, "There should be no danger of trichinosis, therefore, from any pork-containing products that are obtained from federally inspected packing houses." Unfortunately, this is not true. Federal inspection and regulations of pork and pork products are concerned only with those products intended for normal consumption without cooking. The regulations do not apply, for example, to such commonly eaten products as pork chops, loin roasts, pork steaks, and raw sausage intended for cooking. The pertinent paragraph on the federal regulations in question reads as follows: "18.10 Prescribed treatment of pork and products containing pork to destroy trichinae: (1) All forms of fresh pork, including fresh unsmoked sausage containing pork muscle tissue, and pork such as hams, shoulders, shoulder picnics, bacon, and jowls, which are subjected only to curing or to smoking at temperatures that do not impart to the meat the appearance of being cooked, are classed as products that are customarily well cooked in the home or elsewhere before being served to the consumer. Therefore, the treatment of such products for the destruction of trichinae is not required." The consumer must still beware!*

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STONE IN GALLBLADDER

TO THE EDITOR:—*To a query in* THE JOURNAL, *Dec. 3, 1955, page 1424, is an answer on the advisability of removing a solitary gallstone in a 49-year-old woman, with cancer prevention in mind. In the answer it is stated, "Since in the present instance the complaints are negligible, it would appear unwise to subject the patient to the hazard of a major surgical operation." This statement presumes to say that the hazards of cholecystectomy in a 49-year-old woman with an easily removed, thin-walled gallbladder are greater than the hazards of leaving the gallbladder in place with a stone. We must be aware of the danger of cancer and of any other complication that we know such a gallstone may produce, such as, obstructive cholecystopathy; predisposition to formation of other stones, leading to all the complications of stone in the common bile duct; pancreatitis; or a fistulous tract from the gallbladder into the duodenum, with the danger of secondary obstruction of the ileum. The mortality rate in patients undergoing cholecystectomy in good clinics all over the country is 1 to 1.5%, and this percentage is largely a result of patients with gallstones in the past refusing cholecystectomy or physicians procrastinating until complications arise. The mortality from cholecystectomy in patients in whom stones exist, which have not produced other pathology, would undoubtedly be below 0.5%. The incidence of carcinoma of the gallbladder in the presence of stones is 1 to 2%. In other words, a patient with "silent" stones has more chance of dying of carcinoma of the gallbladder than of cholecystectomy, because carcinoma of the gallbladder, except in those very early cases where stones were removed, is 100% fatal. When we add to this all the other dangers from complications of silent gallstones, which are more liable to come as the patient gets older, it seems senseless to advise leaving silent gallstones. The risk multiplies tremendously with complications.*

We can get an idea of how easily complications arise when we take into account some facts of anatomy and physiology. The normal gallbladder, and the gallbladder of the patient in question, contracts after every meal. It is funnel-shaped, and the cystic duct is small. Some day, this contraction is likely to force the single stone, or any other that may form, into the narrow outlet so tightly that return circulation and evacuation are blocked. Then, we have so-called acute cholecystitis. The risk then to any operation is considerably increased. The risk of complications with silent gallstones is so great, including the danger of cancer, and the risk of cholecystectomy in such cases is so slight that I feel that a death that occurs after operating for these complications is the fault of a procrastinator. In cases where the gallbladder is thin-walled and functioning but carries stones, and especially a single stone, there is a still simpler and safer way to handle the situation. Until recently we have all believed that a cholecystectomy should be performed whenever possible instead of cholecystostomy. Now we know that in many cases a cholecystostomy with removal of stones can be performed and a normally functioning gallbladder result. The stone is the culprit. Deal with its breeding ground if feasible but at least get rid of it. We have previously believed that the danger in complications, except for cancer, is infection; now we know that it is practically always obstruction. Let us remove these silent gallstones and save lives.

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DENTAL CARIES

TO THE EDITOR:—*In* THE JOURNAL, *Nov. 26, 1955, page 1335, is a query on prevention of dental caries. I would like to add to the presented answer. The role of heredity in regard to caries is often overestimated, as shown by the sharp reduction of caries in children of northern Europe during and after the war years and equally well by the commonly seen rapid disintegration of the almost perfect teeth of primitive people if they change from their "natural" foods to a "refined" diet. Surprisingly, canned peas and corn are found on the given list of foods to be avoided by the caries-susceptible child. Indians in the highlands of Mexico may derive over 70% of their caloric intake from corn, ground or unground, yet they have admirable dentitions, with hardly any caries. As many primitive people with good teeth live on high carbohydrate diets, often including simple sugars, the crucial question is "What accounts for the different effects on the teeth of natural and refined foods? From work amongst many isolated tribes with excellent teeth, I am inclined to ascribe the protective effect of a "natural" diet to a biophysical rather than to a biochemical factor, comparable to disuse atrophy: leave the thigh of a child without the pressure of supporting the body, by keeping the child in bed, and the structure of the femur will undergo a rapid change. The low loads of refined soft diets alter, in my view, the molecular structure of the teeth and render them susceptible to the attacking agents in the mouth. Inanimate substances and biological tissues share their sensitivity to pulsating pressures, and in both submicroscopic structures and diffusion speeds are modified. Rather than trying to avoid almost unavoidable bacteria and carbohydrates in the mouth, I recommend encouraging children to chew hard substances, such as the toughest available bread crusts, harder types of cereals as shredded wheat or toasted corn, or the hardest gums available; if obtainable, also the toasted haba beans, which are widely used by Indians of the Cordillera. In linking the caries tendency to a load lag, that is, to dental disuse, there is hope for improvement by developing some palatable materials that, in addition to a soft diet, would supply the needed compression stress to the teeth of children.*

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EXCESSIVE COFFEE DRINKING

TO THE EDITOR:—*In* THE JOURNAL, *March 19, 1955, page 1069, a doctor posed the query: "Does drinking 20 to 30 cups of coffee daily definitely cause any harmful effects in any person?" We have no fault to find with the consultants' answers in terms of the problem of caffeine content of such a quantity of coffee. However, there are other problems associated with the ingestion of such an amount of coffee, which were not adequately dealt with. Consideration was not given to those ingredients that, more often than not, are frequently added to coffee in the interest of palatability, such as sugar and cream. If a person routinely ingesting 20 to 30 cups of coffee were to add the usual quantity of sugar to the coffee, then its consumption would contribute to the possibility of obesity and/or perhaps have an adverse effect on the person's appetite for other foods,*

which later might result in faulty nutrition owing to displaced elements of the diet. Such a quantity of sugar in the diet certainly must also be considered in terms of the possibly borderline diabetic patient. The caloric and fat intake of cream, when ingested with coffee, should also be considered in terms of its influence on obesity, displacement of essential elements of the diet, and levels of fat cholesterol intake. Although it is agreed that adequate fluid intake is desirable, the ingestion of 4 to 7 qt. of water daily might be viewed as potentially harmful to some individuals, especially those on the threshold of difficulty with fluid clearance. Last, but not least, the aspect that originally prompted this "letter" is the cariogenic potential of such an intake of sugar-sweetened coffee. The nearly continuous drinking of coffee with sugar throughout the day, and in such quantity, could easily result in utter chaos within the mouth in terms of dental caries, if continued over a long period of time. In short, it does not seem justifiable to consider coffee drinking exclusively in terms of the caffeine content of the material any more than it would be justifiable to consider the effect of any drug or food on the individual when additional material is customarily ingested in close association therewith.

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ARTIFICIAL PNEUMOPERITONEUM

To the Editor:—*I would like to comment on the answer to the query on artificial pneumoperitoneum that appeared in* The Journal, *Jan. 28, 1956, on page 342. While it is true that the use of pneumoperitoneum has decreased in this country, the statement that it still is used only in exceptional cases is incorrect. There are many institutions in the United States where pneumoperitoneum has been considered an indispensable part of the antituberculous armamentarium and has been used on rather a large scale. The consultant's statement is correct when applied to artificial pneumothorax, which has been completely discarded in most chest hospitals in this country and has been in use only in exceptional cases in a few others. I cannot agree with the consultant's statement that the use of pneumoperitoneum is merely a mechanical one—by elevating the diaphragm and reducing its activity. The mode of action of pneumonperitoneum, as well as of any other therapeutic collapse procedure, is a complex one and has a profound effect on the entire pulmonary physiology. It has been stressed by many authors that one of the most important factors in therapeutic collapse procedures and in closing of cavities is the role of atelectasis. These atelectatic phenomena cannot be satisfactorily explained by mechanical factors only. There are many other changes in pulmonary physiology during therapeutic collapse procedures and pneumoperitoneum, among which are: change of the elastic properties of the pulmonary tissue; vascular phenomena of reflex origin (pleuropulmonary reflex in artificial pneumothorax or reflex from the abdominal cavity via splanchnic nerves—anastomosis between them and aortic plexus [so-called pulmonary splanchnic nerve]—thoracic vagus, and sympathetic-pulmonary innervation); and, finally, active contraction of bronchial and bronchiolar muscular elements via the same reflex. This last factor has been the subject of numerous studies. Experiments on dogs with (1) acute distention of gallbladder and of biliary tree, (2) artificial edema of pancreas, and (3) repeated traction of the mesentery resulted in massive reflex vascular dilatation of pulmonary blood vessels, with diapedesis of blood cells into the septums and alveoli and in atelectasis formation. Acute attacks of gallbladder stones, attacks of angina pectoris, and trauma to the abdomen are occasionally followed by transitory pulmonary manifestations ("plate-like atelectasis"), where the reflex mechanism is the most probable explanation. One of the most damaging procedures to pulmonary function is interruption of the phrenic nerve in which there is a marked elevation of the diaphragm and reduction of its activity. In artificial pneumoperitoneum, even with a marked elevation of the diaphragm (but without damage to the phrenic nerve), pulmonary function either is slightly reduced or is even normal. It is quite evident that mechanical factors alone fail to explain these phenomena. In the action of pneumoperitoneum many factors take part in various degrees—mechanical, such as elevation of the diaphragm, bronchial obstruction, and change in pulmonary elasticity, and reflex, such as vascular phenomena and pulmonary tonus due to the active contraction of pulmonary muscular elements. An attempt to hold any one mechanism responsible for the complexity of observed phenomena neglects the physiological and anatomic evidence. I discussed this subject in detail in the July and October, 1952, issues of the Quarterly Bulletin of Sea View Hospital.*

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TREATMENT OF TYPHOID CARRIER

To the Editor:—*In the Queries and Minor Notes section of* The Journal, *Feb. 11, 1956, page 518, in regard to the treatment of typhoid carriers, testing of the carried Salmonella for antibiotic sensitivity is advised and the use of chloromycetin is particularly suggested. I wish to comment on this opinion. Salmonella, regardless of type and length of carrier condition, frequently disappears without any therapy. There is no valid evidence that antibiotic therapy has any effect, even if the organism is sensitive to chloromycetin or another antibiotic in vitro. Antibiotic treatment, particularly if larger doses are applied, frequently severely upsets the bacterial equilibrium in the intestinal tract and decreases the coli and Klebsiella flora, which act as natural antagonists to Salmonella. Antibiotics frequently stimulate overgrowth of such organisms in the intestines as Proteus, Pseudomonas, Staphylococcus, Candida, and others, undesirable when out of normal proportion. Moreover, any massive and prolonged antibiotic treatment may lead to systemic reactions, lowering of resistance, and consequently to blood stream invasion of otherwise saprophytically carried organisms.*

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RADON SEEDS IMPLANTED IN LIVER METASTASES

To the Editor:—*In the Queries and Minor Notes section in* The Journal, *Feb. 25, 1956, page 727, on radon seeds, the answer was somewhat lukewarm in discouraging the use of radon seeds in small liver metastases. In the light of modern knowledge concerning spread of malignant tumors, such therapy is definitely contraindicated. The chances of other deep-seated metastatic lesions in the liver that could not be properly implanted, in addition to the probability of tumor elsewhere in the body, would make such therapy meddlesome. While the answer is essentially correct, I believe that the points just referred to should be emphasized in the interests of the welfare of such patients and of good clinical radiotherapy.*

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ARTIFICIAL FALLOPIAN TUBES

To the Editor:—*In the answer to the query in* The Journal, *Feb. 4, 1956, page 423, on artificial fallopian tubes, it is stated that Davids and Bellwin reconstructed fallopian tubes by vein and artery transplants in dogs and found the procedure practical. We would like to add to this answer that they found this practical only in that it produced a patent tube without ciliated epithelium, which is so essential to normal function of the fallopian tube. We are afraid that the impression was created that this procedure has a possible place in fertility.*

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